



The human body is like the universe.

Greek artists knew this long ago. So all the Greek gods were represented in human form. It means that all the literature and arts in the world exist in the human body.

The first time I saw Kim Rak-hee was in a lecture room at Sejong University
a long time ago. I was sitting quietly alone in the corner of the classroom and drawing delicately
with a pencil, and it was dazzlingly beautiful to see you immersed in the drawing.

Rakhee wasn't a genius

I was becoming like a genius before
I knew it. It was a happy thing to see a little
genius and live. However, it took a long time for Rakhee
to present his paintings to the world.

Now the little genius has revealed all his know-how

I made one book.

Like the martial arts vision of an absolute master that never existed in Gangho, this book will present a new world of human body drawing to many artists.

Even for me who did not major in human anatomy

This book made the best gift.

I wish you all the best in the future of this little artist.



2019. 11.

Hyunse Lee

testimonials

The first time I came to know the name 'Kim Rak-hee' was around 2015, when I was writing the last part of [Buddha's Anatomy Notes]. Since I am not a medical major, I had a lot of worries ahead of the deadline, but at the same time, I saw Kim's <Fantastic 4> cartoon work at a work meeting with a Marvel representative. I didn't try hard, but it was a shock. I have often seen artists who are good at single-cut pictures, but masters who can freely manipulate realistic human bodies in numerous cuts are extremely rare. Admiration as an anatomy book author and desire as a writer in the same field came at the same time. If only I could have this artist's know-how!

No matter how great an anatomy is, not everyone can draw well. The artist's own secret technique, which he learned by himself while facing countless blank sheets and repeatedly fighting in real life, is different from the realm of simple 'art anatomy'. He had to dig up his know-how somehow. I hurriedly finished the book, contacted him without any hesitation, and urged (actually, close to threatening) to publish the book with all my speeches.

I finally succeeded in pushing my back to the publisher, and I was delighted.

However, after receiving the edited copy, I felt sorry for myself. The feeling of facing this book now and writing a recommendation is honestly complicated. It's difficult to advertise. I hope this book doesn't sell too much. It is because of my greed that this book is the only book I have.

It reminds me of the time when I saw the manuscript of Kim Rak-hee's short comics a long time ago.

I admire the expressiveness and perfection filled with tremendous density, but what was more surprising was his words as he sharpened a 0.5mm sharpener with a knife. "Brother, that's not over yet."

Artist Kim Rak-hee's attitude towards painting is more than a perfectionist. His detailed portraits, in which he even memorized the location of bloodlines, were enough to humble even the artists who had studied the human body. This is also the reason why I was full of anticipation when he first told me that he would make a human body textbook.

(Kim Rak-hee's drawing of the human body) has kind explanations built on his many years of teaching experience. In addition, it is full of various illustrations that can be opened without worrying from the basics to those who need advanced courses. Above all, it is all the more special because there are illustrations that help 'three-dimensional understanding', which I think must be in human body drawing textbooks. Cute illustrations in the middle of learning that may be blunt help understanding. I am very happy that such a wonderful textbook came out of the hands of a close colleague, and I am encouraged that it can be a healthy stimulus as a fellow painter.

I believe that any creation that expresses people, whether in writing, drawing, or video, is a noble work. I hope this book is in the hands of everyone who needs the skills to bring characters to life, including me who draw cartoons.



Younggon Lee (Cartoonist)

Seck Jeong-hyeon (painter. (Author of Shakyamuni's Anatomy Notes))

The first time I saw author Kim Rak-hee was about 10 years ago when I was in college. All of us were students studying drawing and cartoons, but among them, the method of studying the human body by artist Rakhee Kim left a deep impression on me. While watching bodybuilder videos, he observed the movements of the human body from various angles. It was quite impressive to see him studying while capturing even the changes in muscle movement according to the posture of the person. I remember artist Kim Rakhee of those days, who always played videos related to the human body on the monitor and repeated visual training with a textbook next to her during her work.

A lot of time has passed and now he has written a human body drawing book himself. This book provides easy-to-understand explanations from skeletons to figured three-dimensional expressions.

This is an easy way to approach any position. The expression of the muscles and skin on top of it conveys vividness as if you can feel the movement.

The know-how accumulated over many years as a cartoonist, illustrator, and lecturer is fully integrated into one book. I am sure that readers will find themselves who understand the various postures of the human body in depth as they follow this book.



I have known him for more than 10 years, including life in the US since my college days in my early twenties. He liked his spirit and persistence, and he was one of those people who came to trust him more than anyone else while watching him from the sidelines. I couldn't help trusting him because I knew that my brother's affection for the human body was unique and that he had accumulated knowledge for a long time.

From the first time I met him, his professionalism about his painting was very special compared to ordinary painters, and that was fully reflected in his painting. Nevertheless, he is still a developing writer. I am also a writer who continues to recommend to students while teaching students for more than 10 years.

His painting becomes a study. Even if you don't rush to study, just watching

will definitely help. I did, and I think a lot of people do. Helpful. Many people who read this book will also very strongly agree with this statement. he is helpful



Inhyeok Lee (illustrator)

Yoon Joong-geun_Pilmong (illustrator)

entering

I struggled a lot for a long time while studying painting on my own. Since no one was there to tell me the answer, I asked myself 'ls this the right way to do it?' Drawing a picture is like facing yourself. You can see how far you understand, how immersed you are, and whether your mind is impatient or calm by looking at the picture. Having a heart in a picture also means that a good picture can come out only when you have a calm mind. As the process of holding each picture to the end through repeated trial and error accumulates, you will discover it before you know it. The self that has changed with the painting.

This book consists of how to interpret the complex human body in a simplified form and how to study the working principle of human body movement through this and apply it to actual drawing. As I systematized the theories I had been researching so far and made picture materials so that many students could understand them, it eventually gave me an opportunity to study my own basic skills from the beginning.

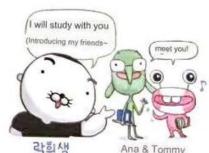
The more you study the basics, the more new it becomes. It feels like correcting a stiff posture that is leaning to one side without knowing it. Studying the basics is the first knowledge you learn when you enter painting, and at the same time, it is a 'self-objectification work' to shake off the wrong habits that you have to do steadily even after you become skilled in painting. It's not a gateway to pass through, but it's like stretching that you always have to do to balance your body.

Working as an animator, film storyboard writer, illustrator, and American comics artist, what I felt at various work sites was that, in the end, 'the basics are the most important' in any genre of painting. I had to study the human body again to solve the problem that the picture didn't come out the way I wanted or it took too long to draw a picture I liked.

While teaching students studying painting, I was able to see up close what the students struggled with the most. There were various types of concerns, but the fundamental problem was 'insufficient basic skills'. The methods

in this book are not just a means to help understand the theory, but are also the working methods I always use when I actually draw. I hope this book [Kim

Rak-hee's human body drawing] will be a guide to give you directions and will be a book like a pace maker for a marathon that will give you strength again at the moment you get tired of drawing, nice to



November 2019 Author Rakhee Kim

Congratulations.000

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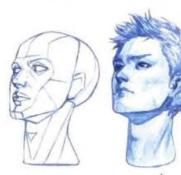
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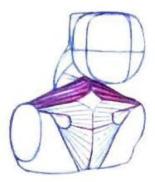


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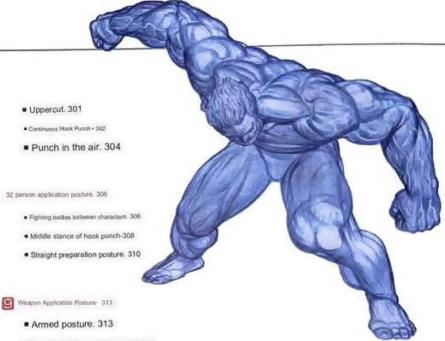
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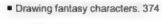
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figuration on the skeleton

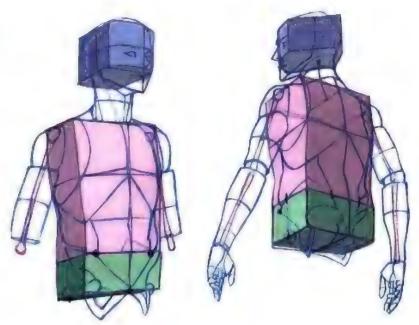
Just like practicing vocalization when learning a song for the first time and developing basic physical strength first when starting an exercise, SOLID FIGURE should be the basic basis to draw the human body well. Figure drawing of the human body is not simply connecting and attaching shapes as if they would fall apart if you simply 'knock' them, but overlaying shapes with the flow of the human body on top of an accurate skeleton to realize the human body is like a blueprint.

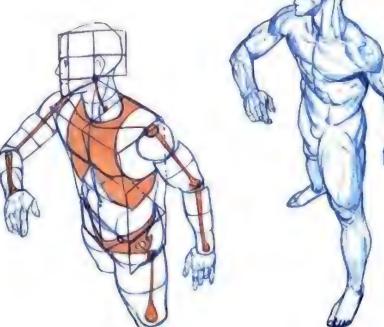
Through the skeleton, you can check the most basic and important information of the human body, such as proportion, center of gravity, and motion.

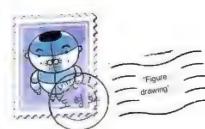
You can also study the volume of the body and the large flow of the human body by applying shapes on the skeleton. If the skeleton is unstable, the human body will look awkward even if a high-quality description is added. Figuration is a very effective way to understand the complex human body in three dimensions, and through this, it is possible to express various angles and postures out of a flat picture. In this chapter, we will understand the core driving principle of each joint by simplifying the basic skeleton of the human body, and apply the volume of silicon material on top of it. If the skeleton is excluded from the figure design stage because it is not visible, or if the external appearance is set like a wooden doll.

the movement range of the joint moves differently from the real one and the movement is limited. Therefore, it is possible to realize a natural movement like a real person moving only when soft silicone figures are applied on the skeleton, which is the axis of movement.

















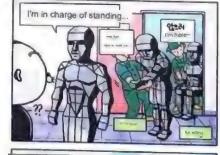




Let's talk calmly









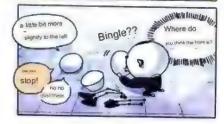
oval shape















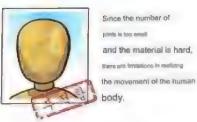
I don't know how to study because each book has a different shape.



The interpretation of 'how to simplify the shape?' varies from artist to artist. The important

thing is that every movement of the human body must be able to be realized in 3D from any angle. Figure drawing that is far from the flow of the human body, works only in one posture, or does not express the movement of a person is wrong.

wood carving



flow diagram



muscle shape

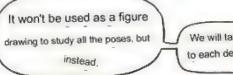


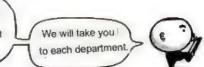
I can't understand the principle of movement and the form is too complicated

oval shape



The front, side, and rear boundaries are ambiguous. The form is too simple to theorize.















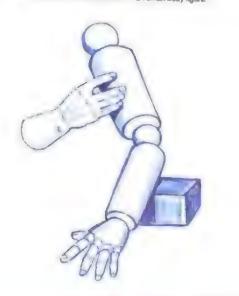


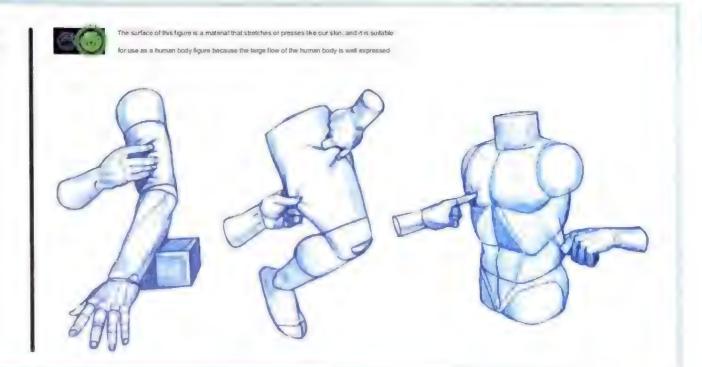


Material of duck boat human figure



The material of this figure is hard, so the surface is not pressed or stretched, and the outline is expressed in an overly simplified flow, making it unsuitable for use as a human body figure.





Because of the hard feeling that the word 'shape' often gives us, it is easy to perceive a shape as a solid object with a fixed shape. However, if you

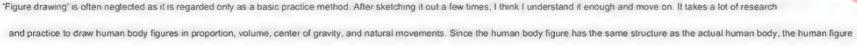
think of the human body as an overly simplified figure, you will get confused when drawing due to the volume of the figure, which is different from the actual flow of the human body.

The shape we will use is made of a soft material on the outside and a solid skeleton on the inside, just like the real human body. The joints

are not made like the joints of a toy, but can implement the movement of the human body in a simplified form of the bone joints of the actual human body. It doesn't

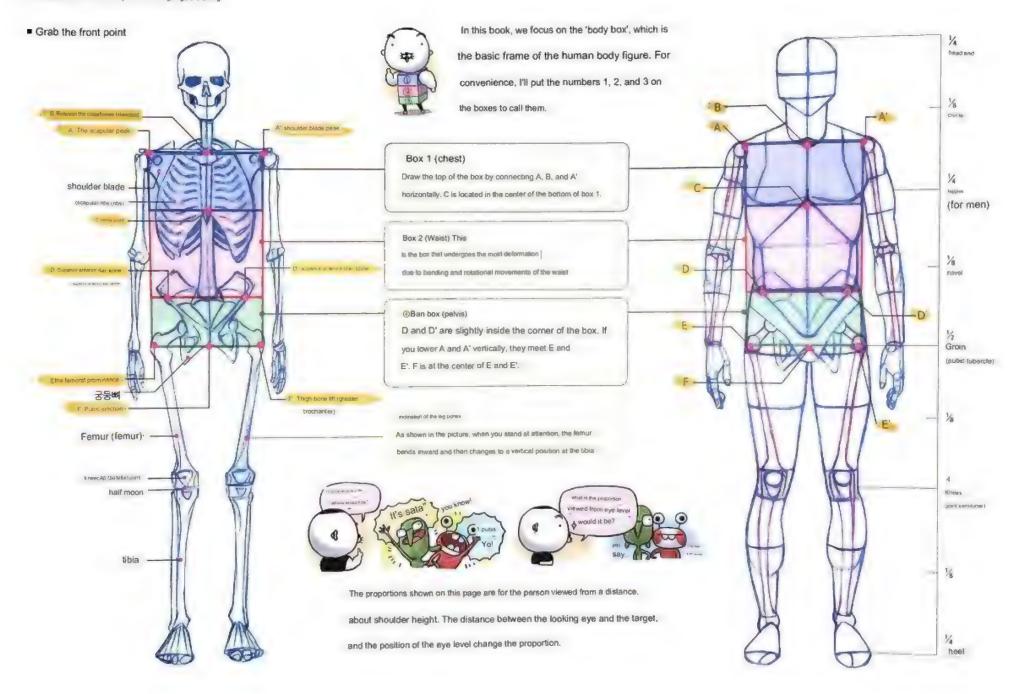
make a 'popping' sound when figures collide with each other, but when pressure is applied, they are pressed and when pulled, they stretch. In

other words, it is not a sphere and a cylinder connected together, but a figure that shows the great flow of the human body.

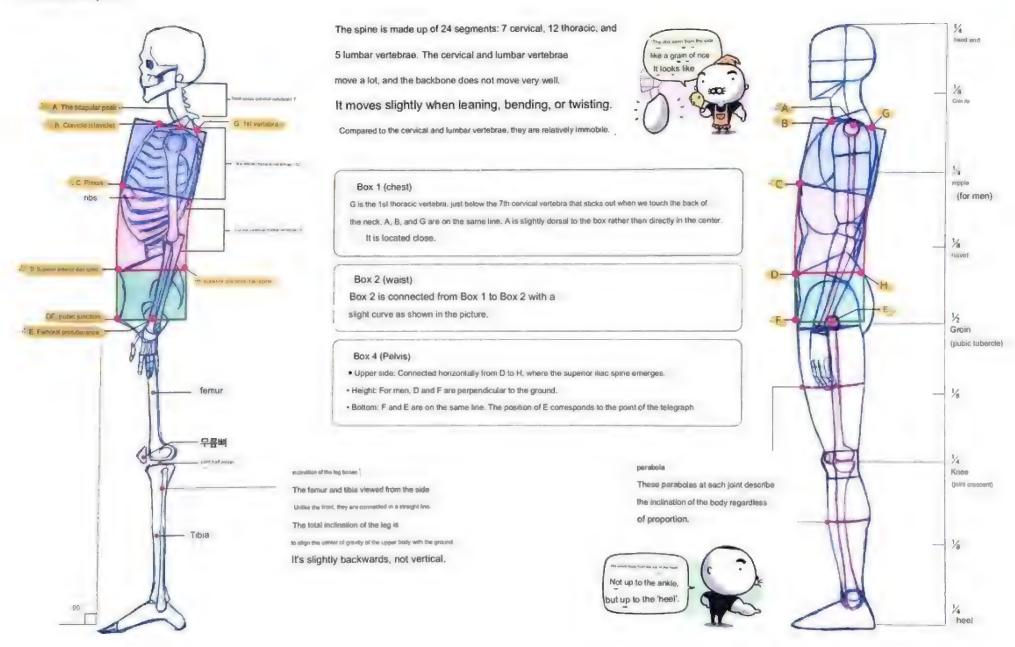


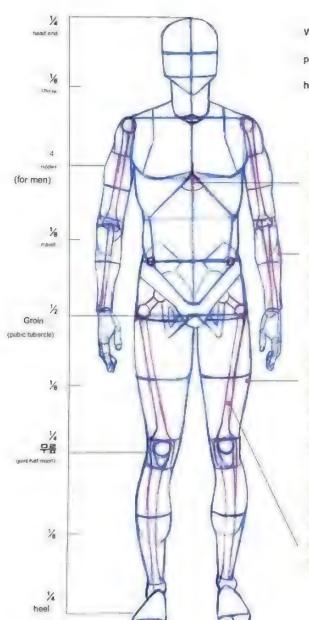
appears immediately by erasing the lines at the junction where the figures are connected. Human figure drawing is a must-have study method for everyone from beginners to experienced students.





■ Grab the side point





When studying male and female bodies, practicing with men and women of the same height will help you compare body differences more clearly.

Ango Albania Salamo ago ani banda arapata-

The angle of which the site diverge is greater in men than in women. **Big.**

The ofference is the angle of areas may and plants hand from once

When the arm is comfortably lowered, the elbow bends outward in men and inward in women. This difference is caused by the thickness of the muscles around the armoit.

Olerano Interes mas and Sense Dayle

There is a difference in that men's thigh thickness rapidly decreases at the knee because of their muscles, while women's thigh's gradually taper with a smooth flow. A female athlete's muscular legs show the same flow as a male's.

femur

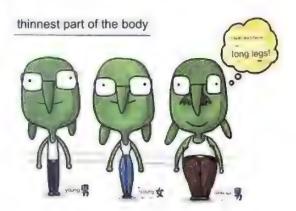
Compared to other parts of the body, the position of the femal bone when viewed from the front is not in the center of the body, but outward. This is a common feature of both men and women.



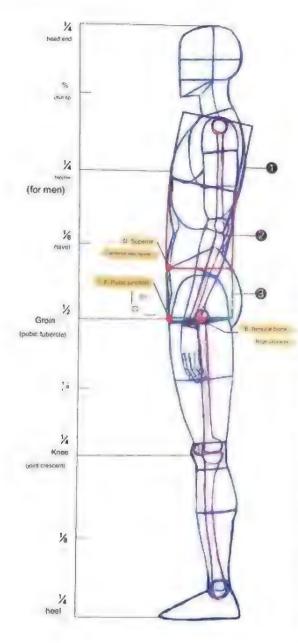
The point of human body proportions is slightly above the pill of the stomach for both men and women. In men, this point is the same as the nipple, but in women, the chest is lower than in men, so the point is located slightly

Collections believes their grid byrood old.

Men's ribs are wider than women's, and women's;
The lower part of the ribs is characterized
by a sharp narrower than that of men.



Men wear a belt around the pelvic bone line when wearing pants. Women's legs are narrower at the point where their ribs end, so they can wear so-called 'babe pants' that go up to the navel, making their legs look longer than men's. Men can only wear baggy pants when their stomachs come out.







Why is the spine curved in an S shape?



When we walk or run, when we put our feet on the ground, the body is pressed in the direction of gravity. At this time, thanks to the spine that is bent like a spring, you can mitigate the shock. If the spine were straight, like a straight column, the impact would not be alleviated and would break.

Tilt of box 1 (chest)

When you stand still, your body leans back slightly, so the box also leans backwards. A woman's upper body leans back more than a man's due to the weight of her breasts.

Thickness of box 2 (waist)

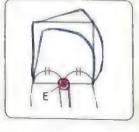
The width of the side box is the same for men and women

Tilt of box (pelvis)

The angle of D to F is vertical for the male, and the female is leaning forward instead of vertical to

E is located in the center of the bottom of box 3.





box proportions

In order to accurately represent the volume of the torso, it is very important to find the point of the box while looking at the picture and practice drawing the box.



process



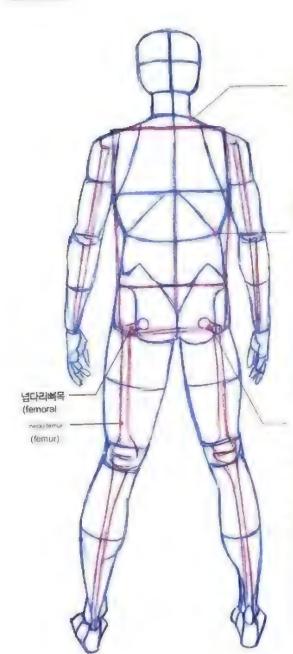
When I draw an arm, I can't get the arm's length right



When you stand at attention, your wrist touches the large process of the femur, which is the point of the whole body. It's a little easier if you hold the length of your arms based on this.

joint size

For women, please draw small joints of the bones.



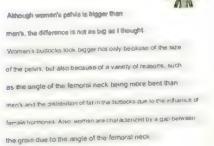
Transportation or a visual vis

Men's muscles are developed so the height of the trapezius is higher than that of incimen. Women have lower trapezius mascles than man which makes their necks took longer.

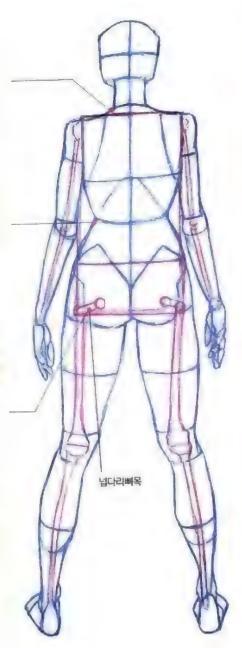
body

Men have a straight side line, and women have a concave flow in the middle with a contrast between small ribs and buttocks.

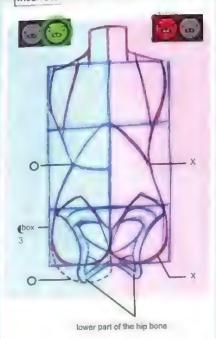
Are women's hips large only because of their large pelvic bones?







Incorrect note Female waist and hips



- To express a woman's narrow waist
 The flow of the waist is only excessively curved
 Rather than drawing, the ribs are over
 The angle changes at the point where the polys begins
 It's good to save points.
- 2 You can't stuff your ass in box 3. The buttocks come out of the box as much as the length of the fower part of the hip bone branch that looks like a handle under the pelvis. This is a common feature of both men and women.

human figure

If it is bent, the center of gravity is somehow endangered
I can feel it. However, the flow of the human body
It is made to follow the curved shape of the spine.
The information needed to draw a half-side
First, the angle of the bone viewed from the front and side,
Secondly, the thickness of each part, and thirdly

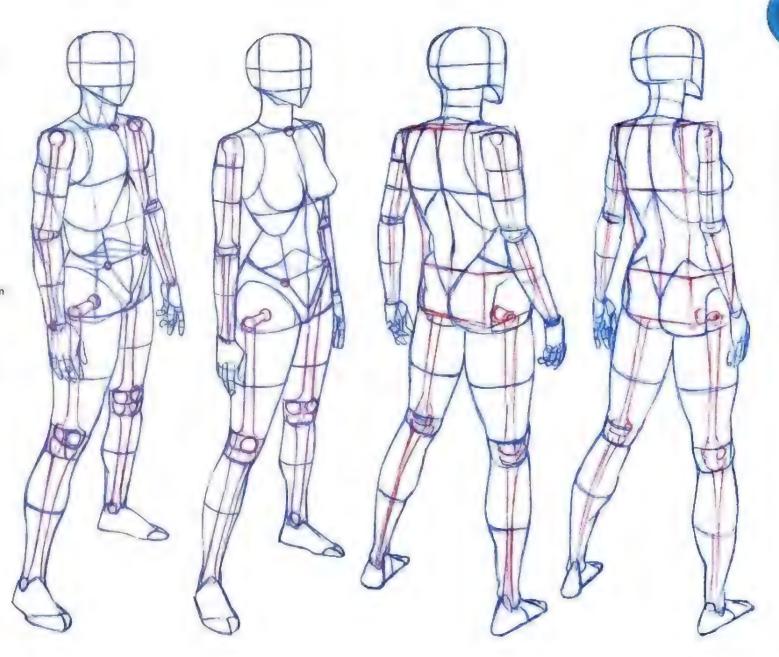
There is a trend of movement. If half side

If it is not drawn well, the front and side

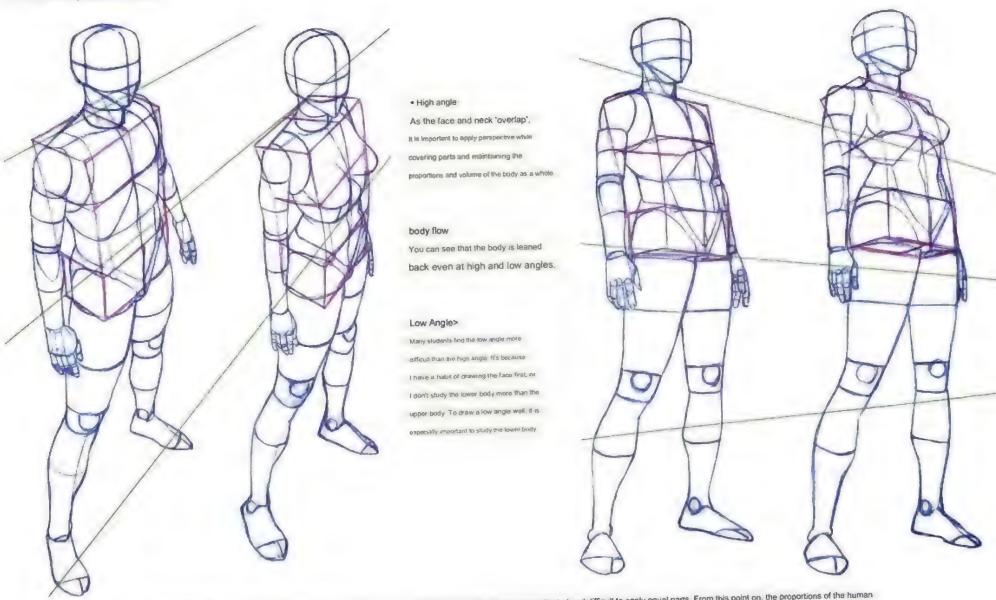
It is because of a lack of understanding, so once again

Take a close look at the information on the side!





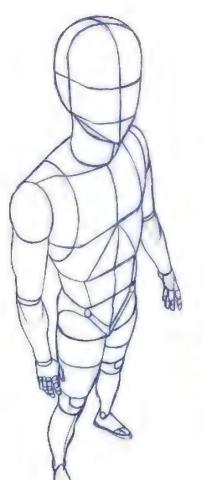
■ Male and female high angle and low angle



In high engle and low angle, the proportion of the human body changes depending on the viewpoint, so if becomes complicated and difficult to apply equal parts. From this point on, the proportions of the human body should be adjusted with the senses, but the space should not be grasped with the senses. If you draw a character first without thinking about the space, or if you roughly draw the perspective line, there is a high probability that the human body will be drawn with an incorrect angle. It is important to make space and draw the human body according to the slope of the lines heading to the vanishing point after clearly setting the eye level.

- Common mistake of high angle or low angle
- fin the picture of wrong answer No. 1, the perspective was exaggerated, so the head was enlarged and the body was drawn rapidly.
- The picture of the 27d incorrect answer could not be applied with a high angle or a low angle, and was drawn only from a normal perspective

It is because of the habit of drawing with intuition that the drawing is too distorted like the picture with incorrect answers 1 and 2, or it is not possible to change the angle at all. Before the human body, we need to study about 'space'.



4 Summer, Common parties for marries

This is a characteristic that is often seen in those who draw only figures without petting up a space. If you get into the habit of drawing only characters without a trackground at high end low engles, you will end up drawing characters.

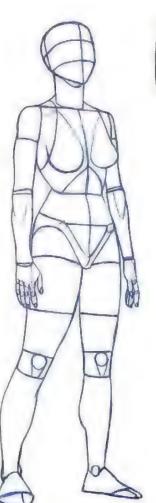
with too much perspective even if you don't retend to because you get caught up in too much perspective. This character is also likely to be drawin with an incorrect sense of proportion.

normal assure normal 2 Potent

I find to draw a character with a low engle whose eye level is close to the position of my feet, but I couldn't boldly change the perspective, so it was drawn in proportion to the normal point of view. It's the opposite situation to the enong answer picture 1, but the actubin is the same.

After creating a spece by setting the exact eye level, draw a person according to the theory so that you can draw a human body.

What his the angle you want, breaking away from the habitual proportions.



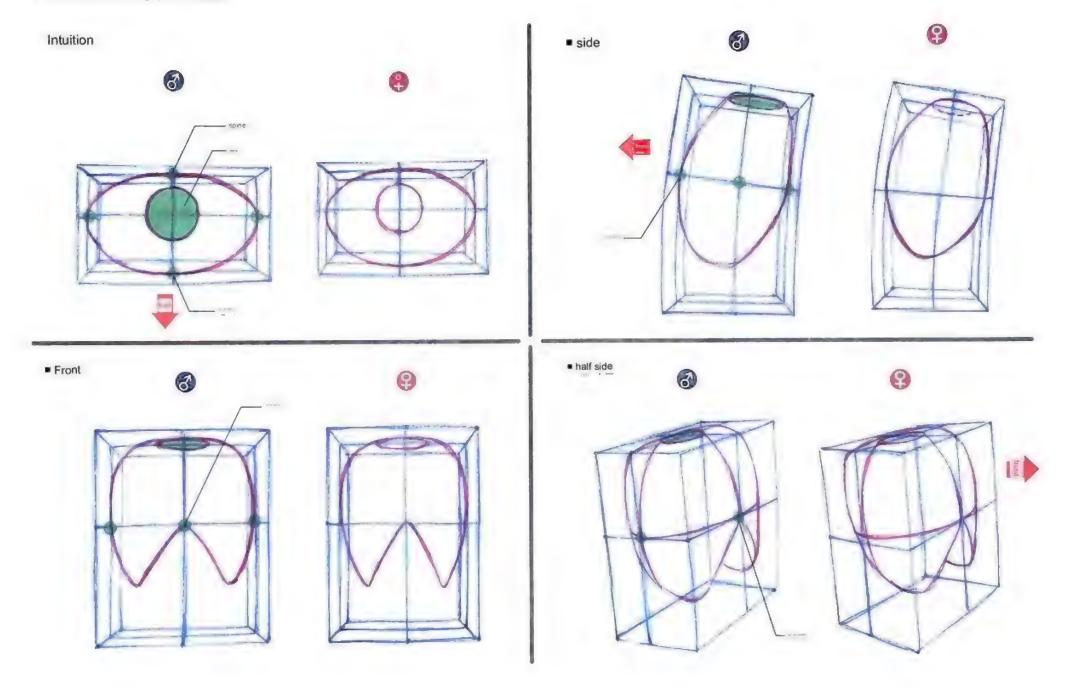


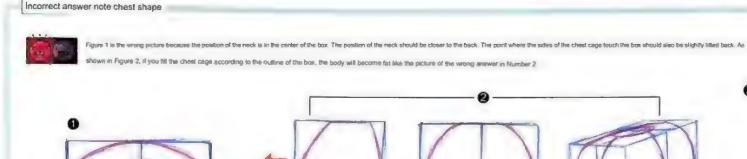


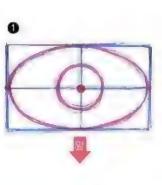
Steps to study painting

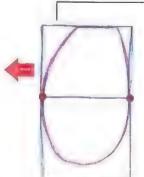
Beginners learning to draw often try to express an impactful posture or angle without having the basics in place. However, the point that should not be missed when learning painting is that painting is an 'applied subject'. Just as you need to understand the basic theory of addition and subtraction when learning mathematics, you can apply all the numbers to get an answer.

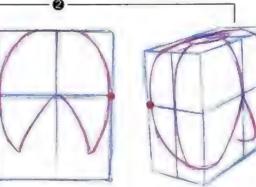
Chest cage (ribcage) in 2 boxes

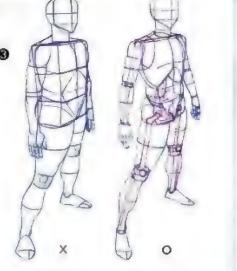


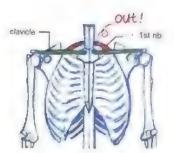












shape of chest

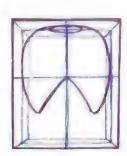
The shape of the thoracic cage is the shape except for the part where the 1st rib rises above the collarbone.

The upper part of the ribs is covered by the trapezius muscle, so it does not affect the outline of the human

body, and the clavicle was omitted to use it as the basis for creating the upper surface

of the box. The actual ribs get narrower as they go up.

Therefore, the actual ribs and the schematic ribs are not exactly the same shape.



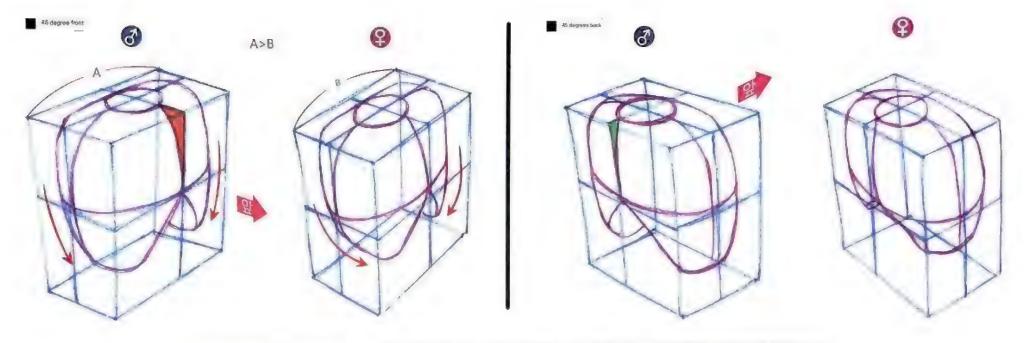
the depth of the box

In order to accurately draw the volume of the chest cage inside the body box, you must not think of the box as flat. You have to understand in three dimensions that the elliptical breast cage is contained in the hexahedral box.

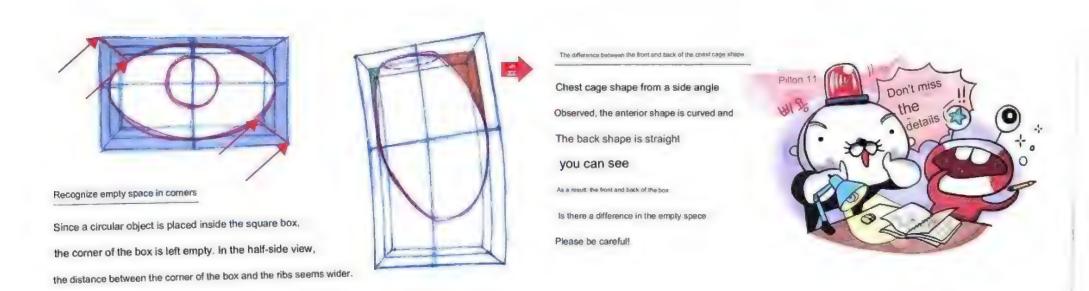
Consider the hidden faces to create a three-dimensional box with a sense of depth,





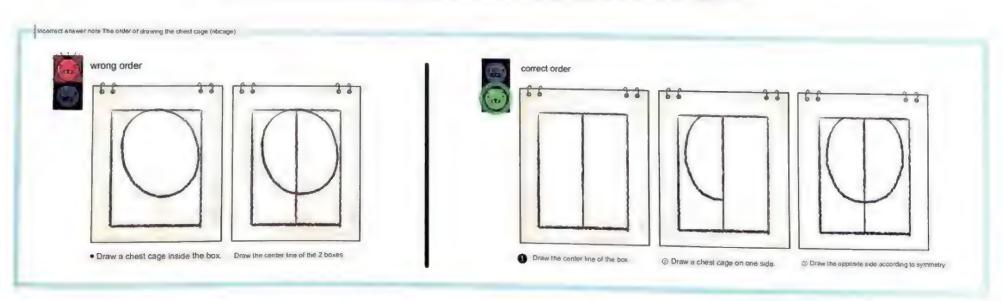


The side width of the male box is wider than the side width of the female box, and the female's ribs are narrower than the male's towards the bottom.

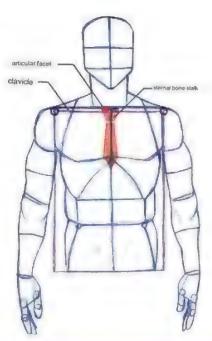


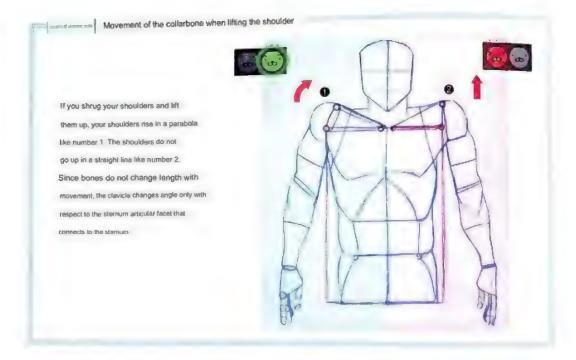
Advantages of holding the box throttle

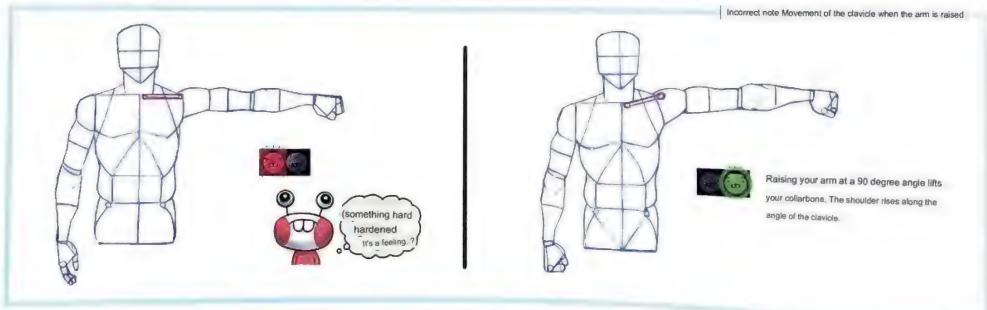
If you frame it with a box, the angle of the box allows you to draw with a clear sense of what eye level and which direction the ribs of the ellipse are facing. Also, when drawing the hidden neck or the shoulder joint on the opposite side, you can see through the box and set the exact position.

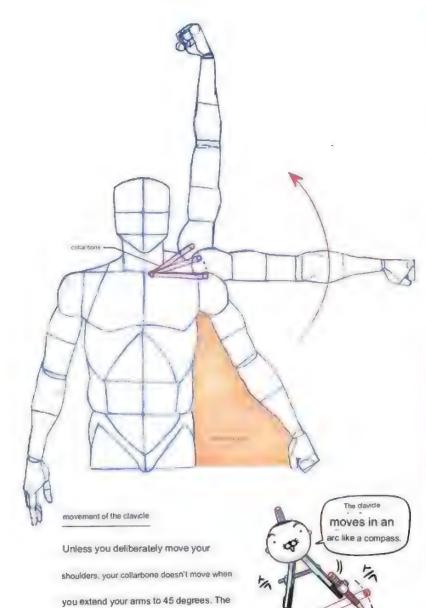


5 Clavicle (bone) that moves along the shoulder



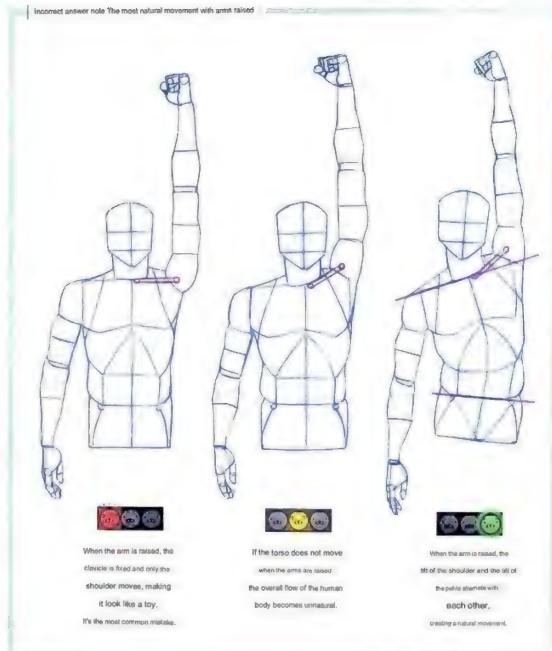


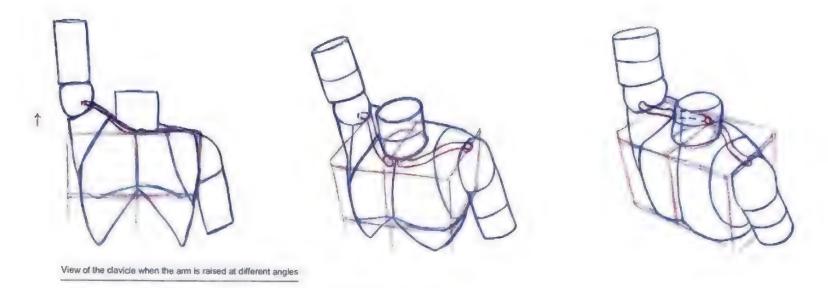




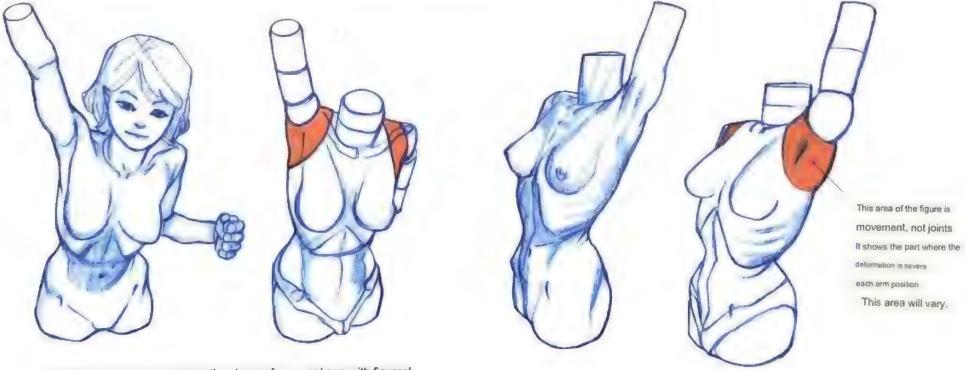
point at which the clavicle rises is

from more than 45 degrees.

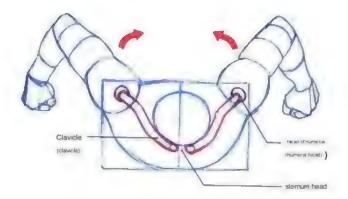


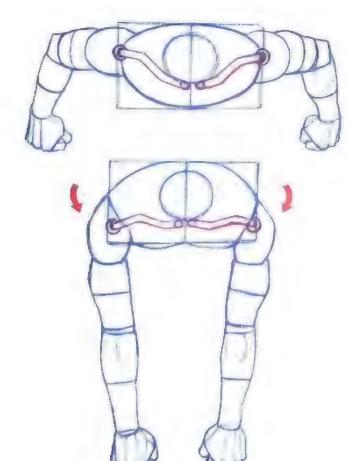


When you raise your arm, you can see the tip of the clavicle roll over the back.



Observe how you can express the shape of your real arm with figures!

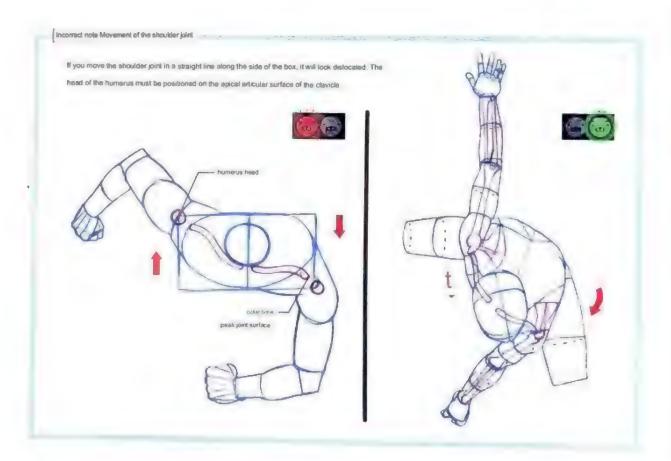


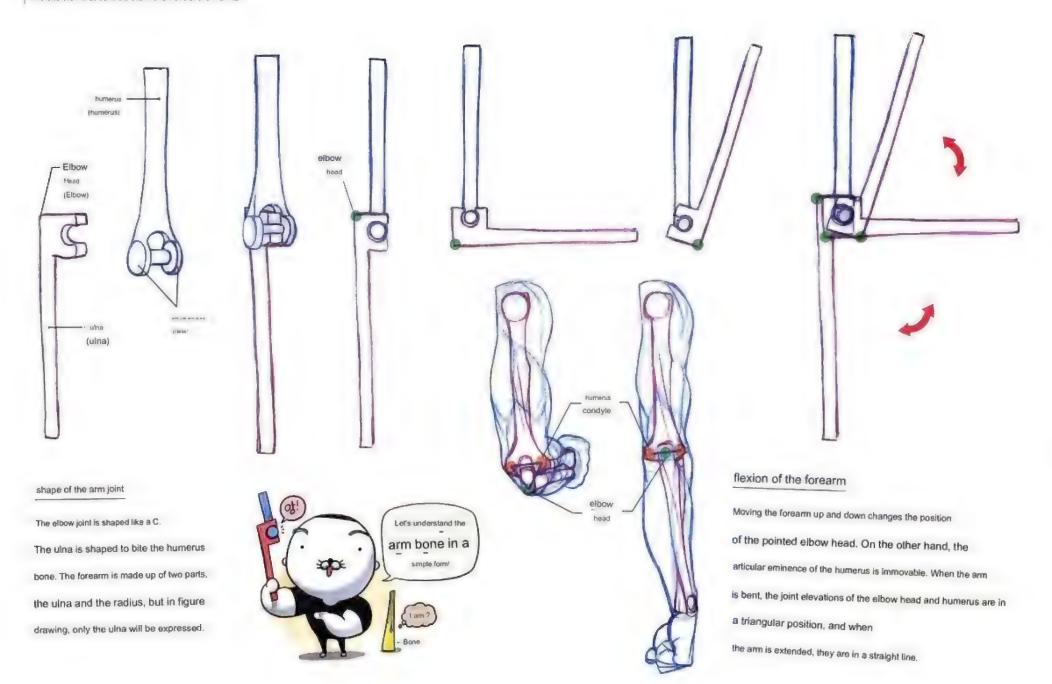


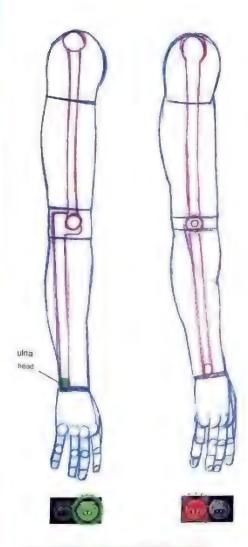
movement of the clawcie when the arm is moved back and forth

When you move your arms back and forth, your collarbone moves accordingly. The shoulder moves back and forth in a circular motion around the joint where the collarbone and sternum are connected. When the arms are brought back, the position of the head of the humanus goes inside the box, making the shoulders took narrow when viewed from the front. Conversely, if you extend your arms forward, your collarbones will be horizontal, widening your shoulders. Please refer to the information on the maximum range of motion that the arms can move back and forth through the pictures on the left!



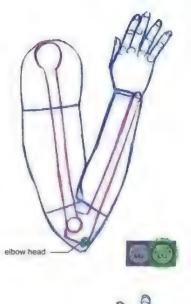






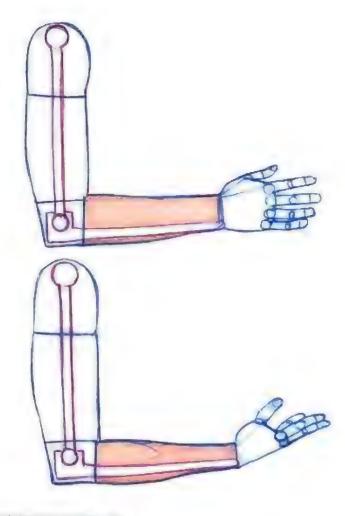
Compare the difference in the shape of the elbow joint.

Also, the head of the utilit is located on the side of the little finger, not in the middle of the wrist.





Every time you move your arm, the position of the ofbow head (head) changes, so there is a change in appearance. If the efbow joint is drawn in a circular thape, the position change of the efbow head is not expressed.



hand orientation and arm silhouette

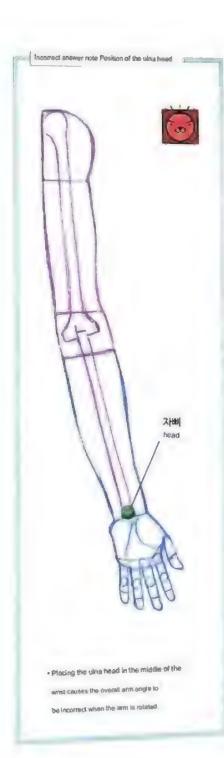
The silhouette of the arm changes depending on the direction the paim is facing.

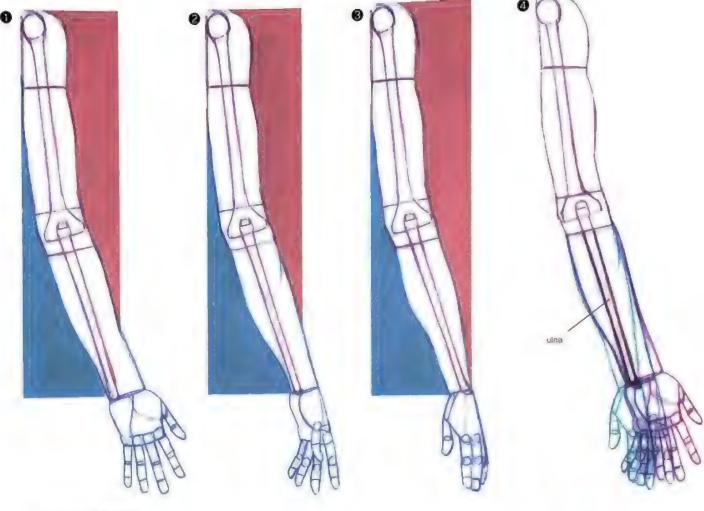
As the forearm bone rotates, the muscles attached to the bone

twist or loosen, causing changes in shape.

When drawing the arm, do not start with the upper arm and work your way down, but

first determine the position and direction of the hand and then draw the flow of the arm.

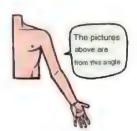


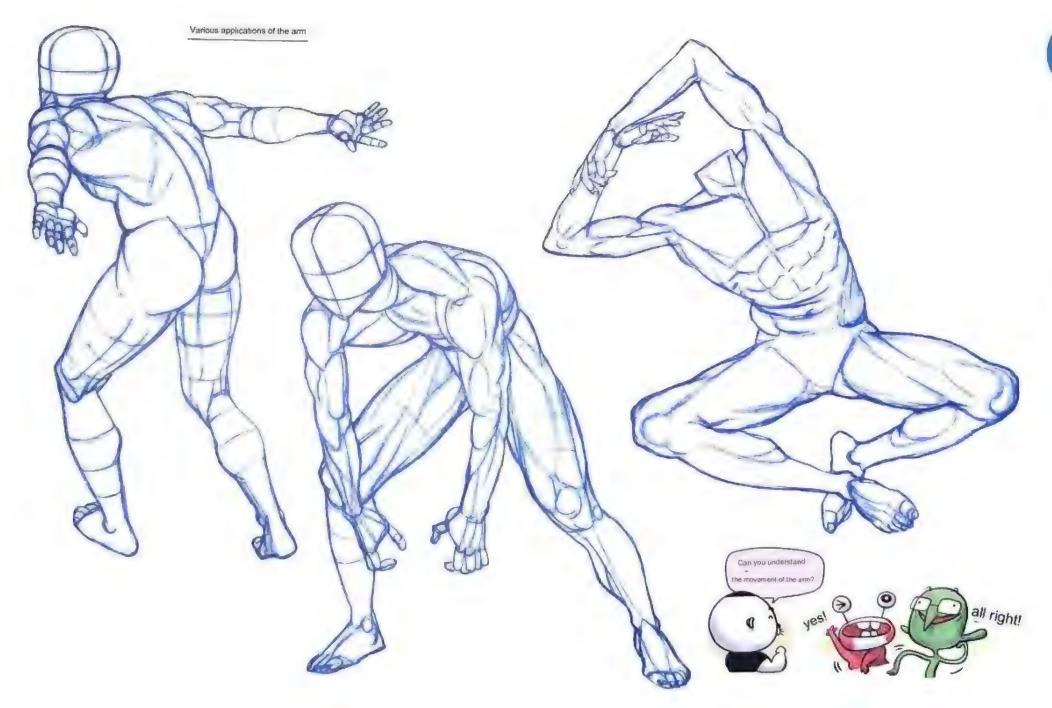


Arm Movement: Rotate

As in number 1, when the palm is facing the front, the angle at which the arm bends is the largest. If you place your arms so that the back of your hand is visible as in No. 4, you can see that the overall flow looks more straight than No. 2. If you look at number 4, which is a combination of numbers 12 and 2, you can observe the phenomenon that the ulna does not move when the hand is turned down, and

the hand turns over with the ulne serving as the standard. The reason why the ulne is used as the standard for the skeleton of the figured arm is because the ulne is not affected by the movement of the hand.





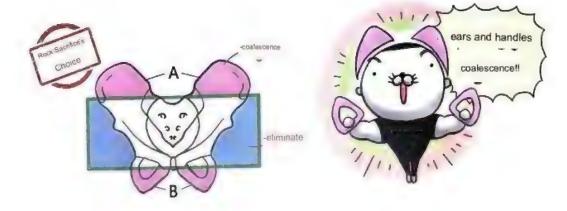
5 Easy to understand complex pelvis

Two ways to shape the pelvis

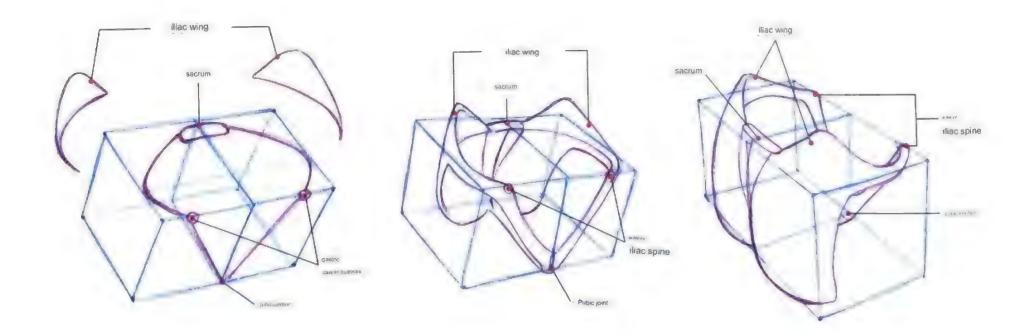


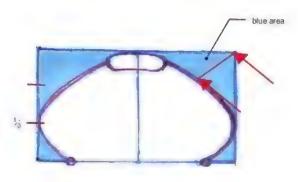


Method 1. Box the entire pelvis and carve it into detailed shapes.



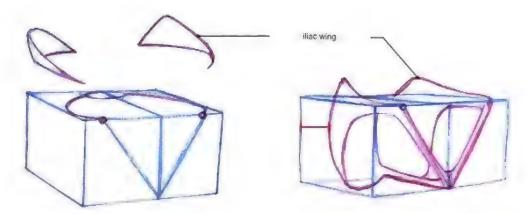
Method 2. After boxing the bulky area, add parts A and B. (I'll learn more about B later.)





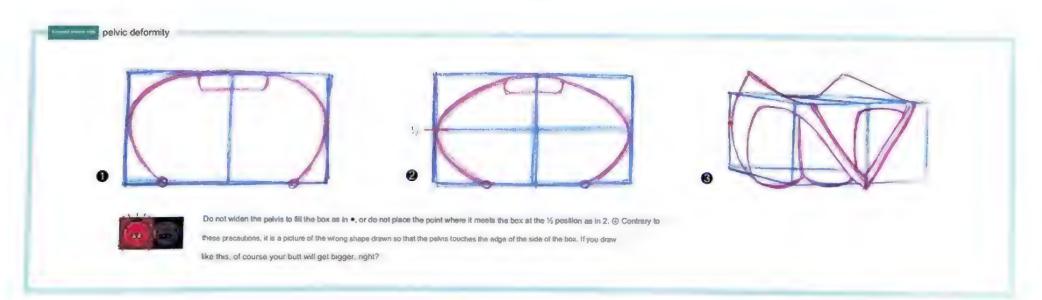
The shape of the pelvis seen through intuition

The point where the sides of the pelvis touch the box is the point. The shape of the pelvis is not an ellipse like the ribs. It's more like a triangle.

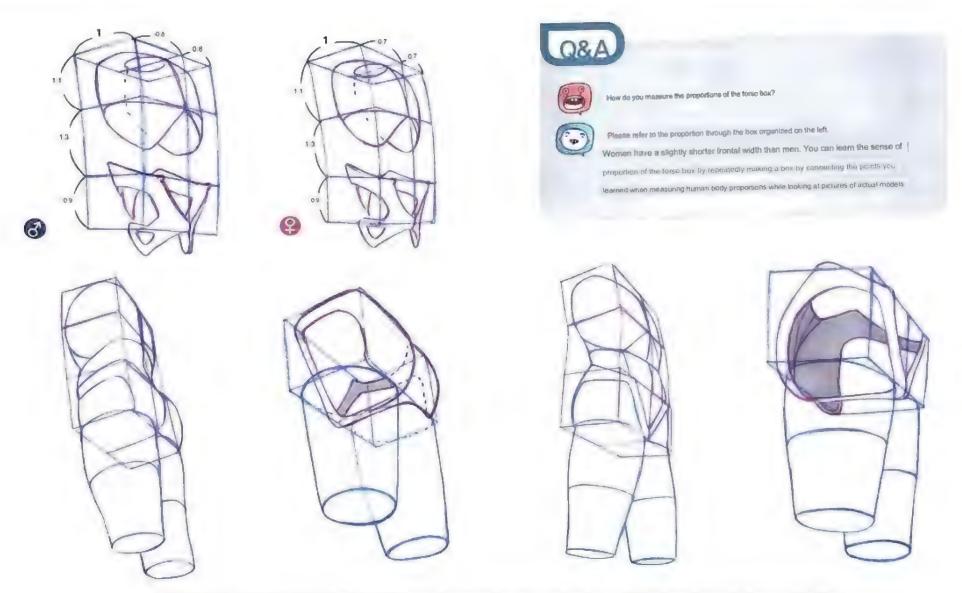


Create a pelvic deformity

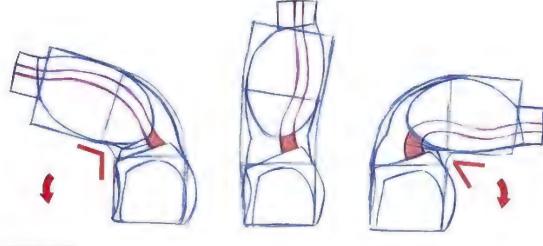
The pelvis looks really complicated. The more difficult the form is, the simpler it is to understand. The shape of the pelvis is a form in which a triangular panty line is connected to the buttocks along the flow of the iliac wing. The blue area in the picture on the far left is the space that needs to be trimmed, so make sure the pelvis doesn't touch the side edge of the box at the half-side angle.



3 Meeting of the chest cage (thorax) and the pelvis

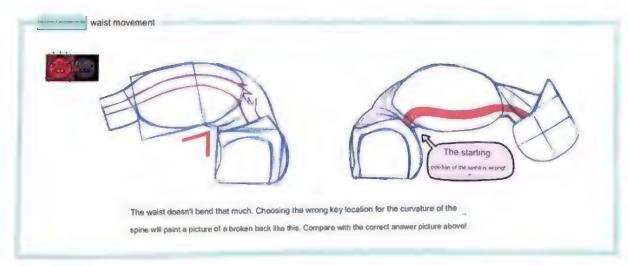


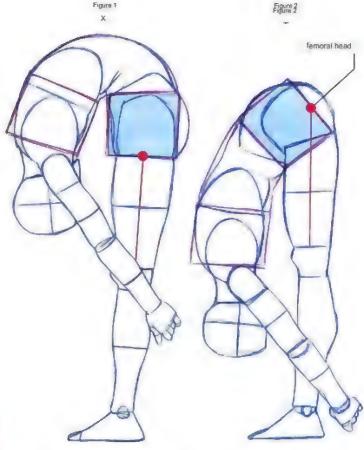
It is very important to understand and draw even the invisible parts three-dimensionally, and practice holding the pelvis point in the correct position.



movement of the waist

Bending forward at the waist puts pressure on the organs. So the angle of forward curvature of the spine is not great. The spine, on the other hand, leans back more. The point where the spine curves is the lumbar vertebrae shaded in the picture above. The visible part of the waist is the spinous process, so you shouldn't think of the spine as being in the back. The vertebral body, which is the center of movement, is located deeper in the body than you think.



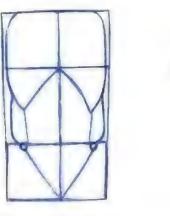


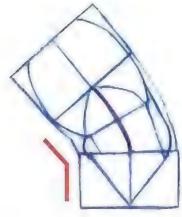
The reason why the body can be folded like a folder is not because the spine is bent as in Figure 1, but because the pelvis is tilted because the hip joint, which is the axis of the femur head, moves as shown in Figure 2.

The relationship between the lower back and the femus



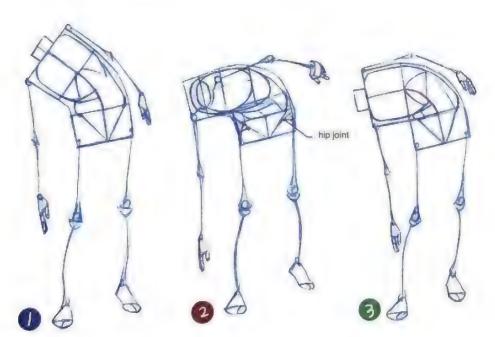
posture of bending

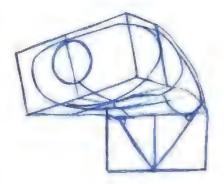


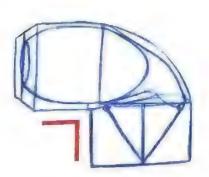


If you bend your waist to the side with your upper body facing the front, the lower part of

the ribs and the petric bones engage each other, preventing the lower back from bending too much







When the upper body is twisted, the cracked grooves of the ribs are directed toward the pelvic bones, creating space. This will allow you to bend your lower back more.

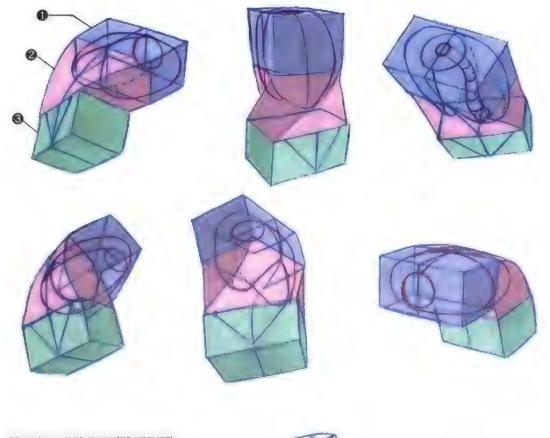








- When I try to pick up something that has fallen on the floor, my ribs and pelvis come into contact with each other, fimiting my movement, so I can't bend my upper body much.
- As mentioned on the previous page, when leaning forward, the hip joint between the pelvis and femur moves rather than the lower back, and this is the most natural posture for picking up objects from the floor.
- If the movement of the waist bending sideways is expressed excessively as shown in the picture, the ribs will damage the organs, right? It's actually an impossible position.



movement of the box

Box 1 may change slightly depending on the movement. Box 2 is flexible in shape, such as bending and twisting.

It is drawn curvilinearly according to the flow of movement.

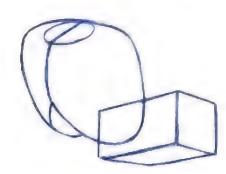
Box 3 has no deformation at all.

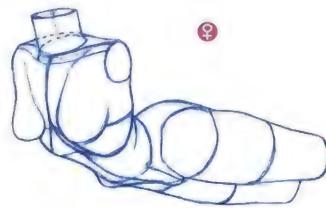
Deformation of the box

Box 2 (waist) > Box 1 (chest) > Box 2 (pelvis)



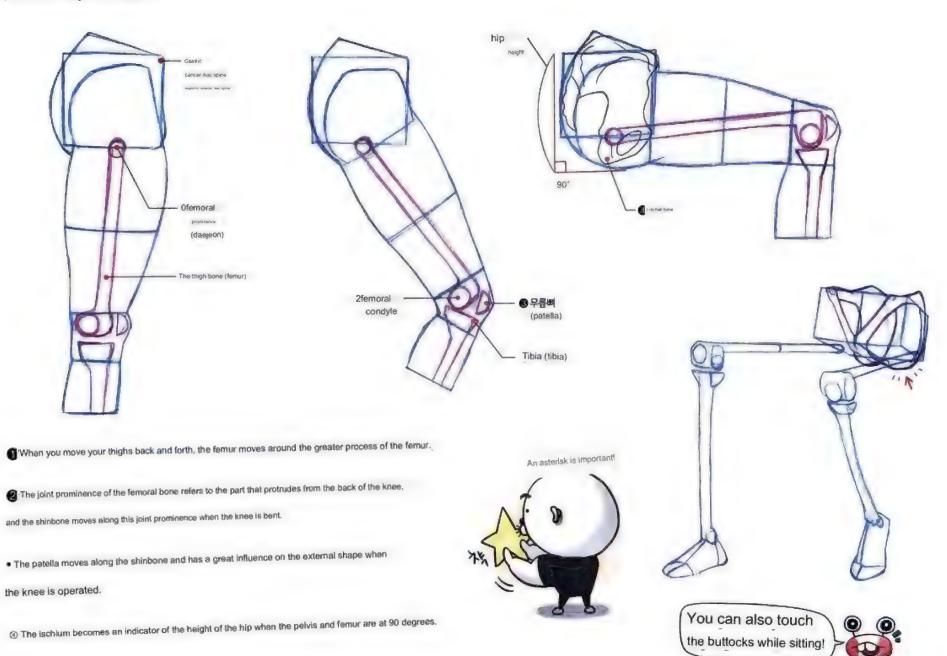




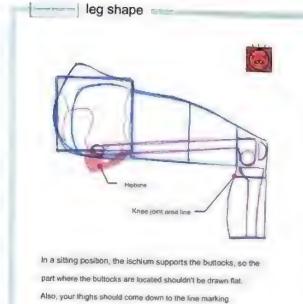


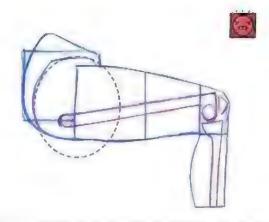


2 points of leg movement









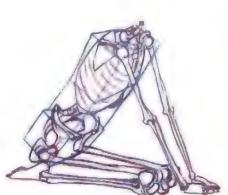
The thigh shape has dug into the area of the pelvis. The boundary line of the joint part changes position every time it moves. If the visible part is taken as the standard of proportion the shape becomes unnatural when the shape moves in order to be consistent in proportion, shapes should be drawn based on a skeleton whose length does not change.



Application of bending the teg

the knee joint area.

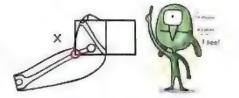


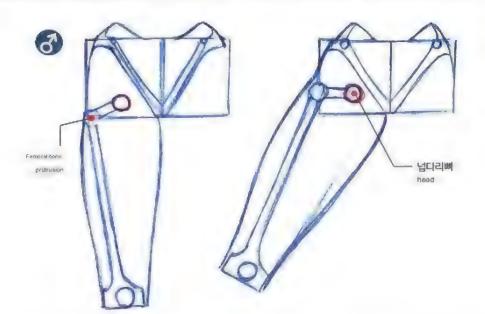


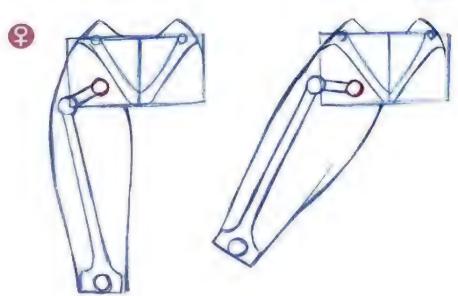




In men, there is not much fat above the femoral process, so the greater process of the femur is in close contact with the skin. In women, fat accumulates around the buttocks and thighs due to female hormones. So, unlike men, the femoral protuberance is covered with a layer of fat and is not prominent outwardly. When moving the thigh back and forth, the greater process of the femur is the standard, but as shown in the picture below, the head of the femur is drawn as the axis when moving the leg sideways.







Incorrect answer note Fernoral hand and greater process of the fernor

Familia born

protrusion

If you don't know exactly the shape of the joint that is the axis of movement, the shape when you move will be wrong. The joint where the femur meets the petris is bent in the shape of a golf club. So you can't think of it as a straight line like the humerus we learned earlier.

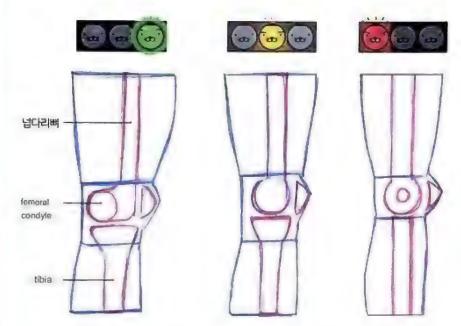
When you move your leg sideways, it is important to recognize the position because you move the femoral head as an axis.

As shown in the green femoral bone picture on the left, when moving the leg back and forth

It is not wrong even if the large protrusion is the center, but an error occurs when the legs are spread to the sides as shown in the red femur bone picture, how is it. How easy is it?









If you look at the knee from the side, the joint lengthers backwards like a golf club. The part where the bone protrudes like this is called 'articular eminence'.



If you draw like joint prominence of the femur as a round joint rather than a golf dub shape, the times is expressed thinly when viewed from the side, giving a poor impression.

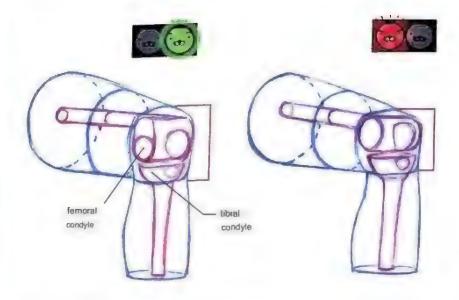


The worst example is to draw the condyle of the femur as a circle and the shinbone as a straight line, as shown in the picture.

This is the most erroneous way to draw a poor knee.



Incorrect answer note The shape of the knee joint when the leg is bent

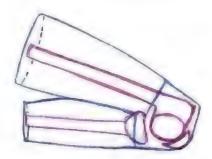


When the leg is flexed and the articular eminence of the femur is erected,

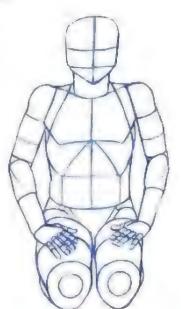
the height of the knee is increased. You should think and draw

the knee as a square rather than a circle

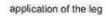
(Femoral joint elevation + Tibial joint elevation = Thickness UP)

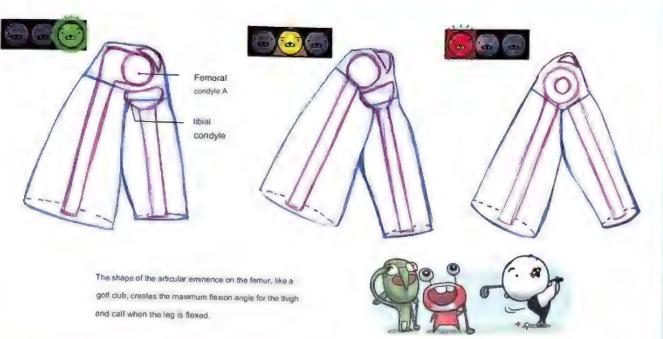


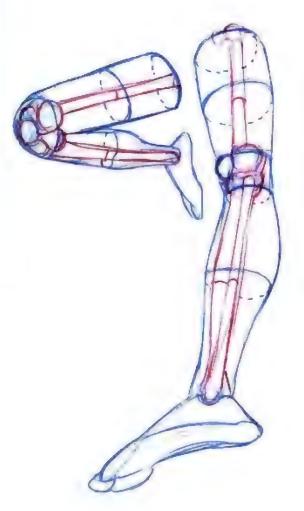




Incorrect answer note Knee joint shape when legs are folded







'Observe how the shape of the real







3 Center of gravity is really important



The human I drew

seems to fall backwards. How the hell do you get

the center of gravity?

View the picture objectively

I said it like a joke, but in fact, we already have a sense of the center of gravity. For example, we can feel the difference in the running postures in the picture on the right. When we look at a photograph or a painting someone else has drawn, it is easy to see whether the posture is stable or unstable, stationary or moving. But why do you draw the center of gravity wrong when you draw a picture yourself? The reason is that when you look at a picture you have drawn, you are not as objective as looking at other images. Also, I feel the awkwardness of the center of gravity, but there are many cases where I don't know exactly where to fix it.

The proportions, volume, and shape of the body were exactly

If it looks awkward, the culprit is the center of gravity.

However, since this center of gravity changes every time it moves,

there is no specific theory that can be formulated. For example, what should I do if I want to make the figure stand up, but it keeps falling backwards?

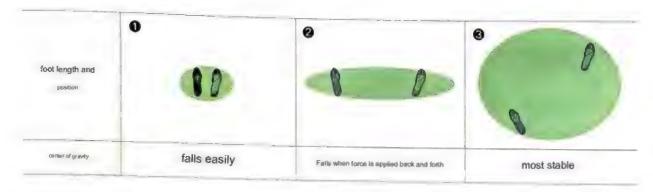
right, but I had to lean forward somewhere or pull my legs back to center. The center of gravity should be learned by sense, correcting and revising until the picture does not look awkward. First of all, the position of your feet on the floor is very important to keep your center of gravity stable. Let's first look at the width of the foot and the direction of the sole.











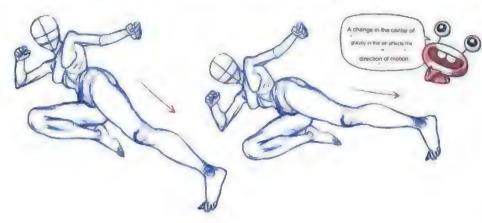


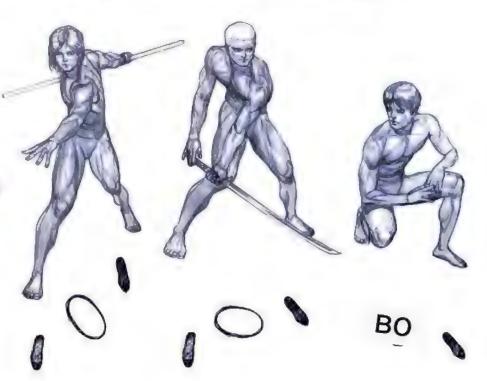
If you stand with your feet aftached to the letter 11 like number 1, the upper body can move within the light green area. The attention posture is the easiest to fall

over, and it is the easiest posture to make a mistake when drawing. In No. 2, the upper body movement was possible from side to side by spreading the feet to the sides, but when force is applied back and forth, the center of gravity collapses. As in No. 2, if you spread the distance between the sides and front and back and place your feet in a diagonal position, the range of movement of the upper body is widened, so there is a high probability that the center will be drawn correctly

Let's take a stand

Diagonal footing is common in dynamic action. You can create a much more stable posture by always taking a pose and feeling which foot is being weighted before drawing. On the other hand, when the human body is floating in the air, you don't have to think as deeply about the center of gravity as on the ground.

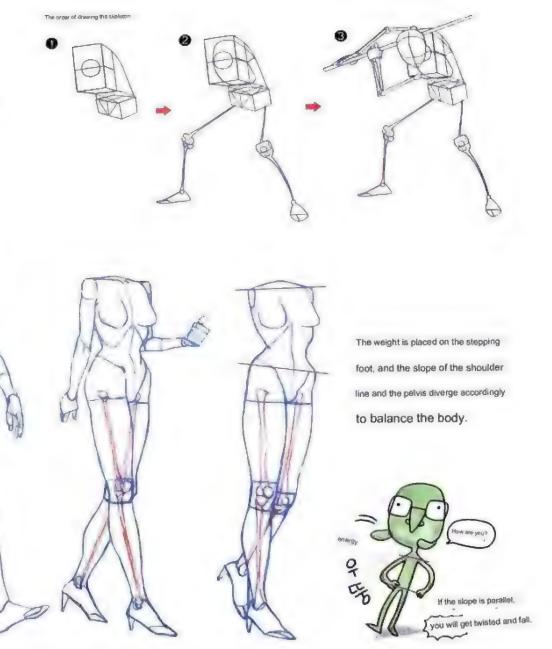




To draw a character with a stable center of gravity, you must first adjust the inclination of the torso, as shown in number 2 on the right. This is because the posture of the lower body changes depending on the flow of the torso, which carries the most weight among the human body. In step 2, not only do you select the position of your feet that fits the center of gravity of your torso, but you also find the posture of your legs according to the flow you want to express. In step 4, draw the movements of the arms that match the flow of the torso and legs drawn earlier on a line that does not affect the center of gravity. The object you are holding in your hand also affects the center of gravity, so this is also an important factor that cannot be left out of the calculation.

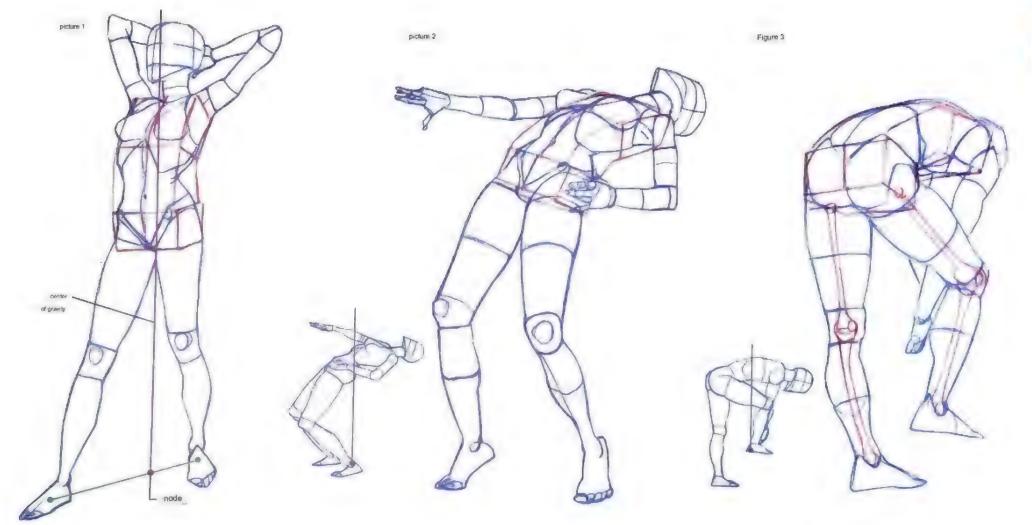
center of gravity tips

of the foot rises. On the other hand, the shouldern go down





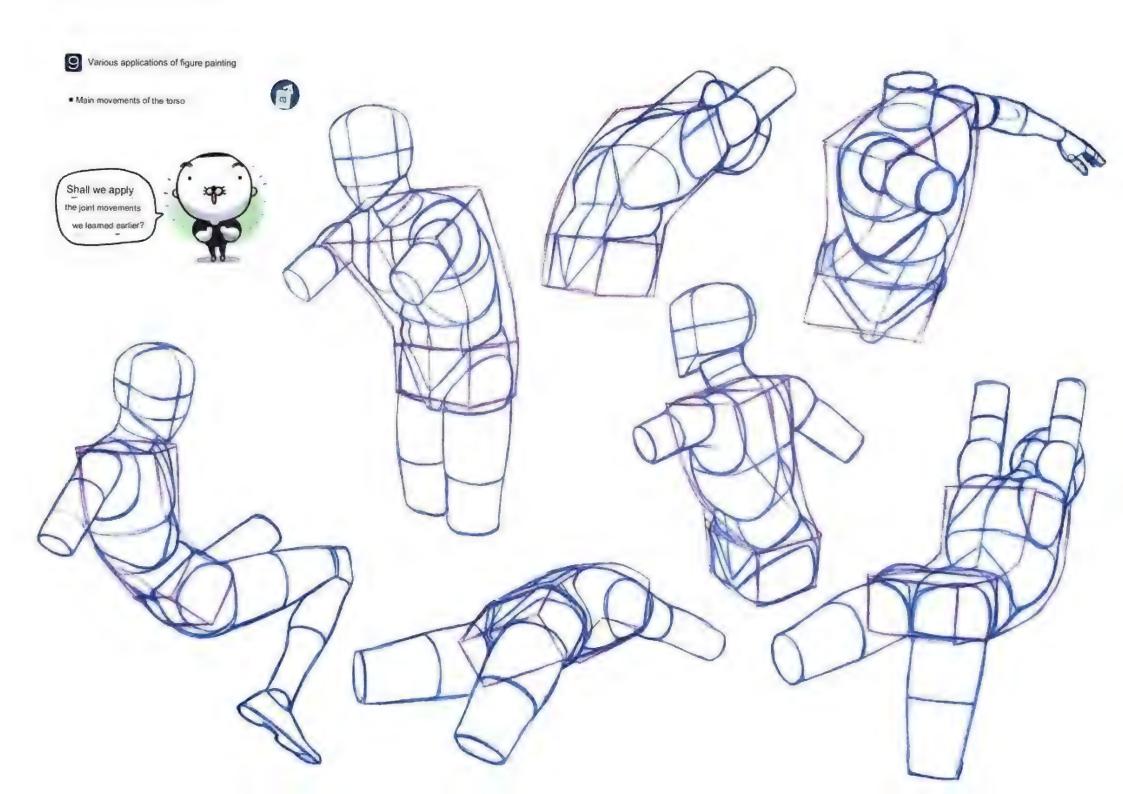


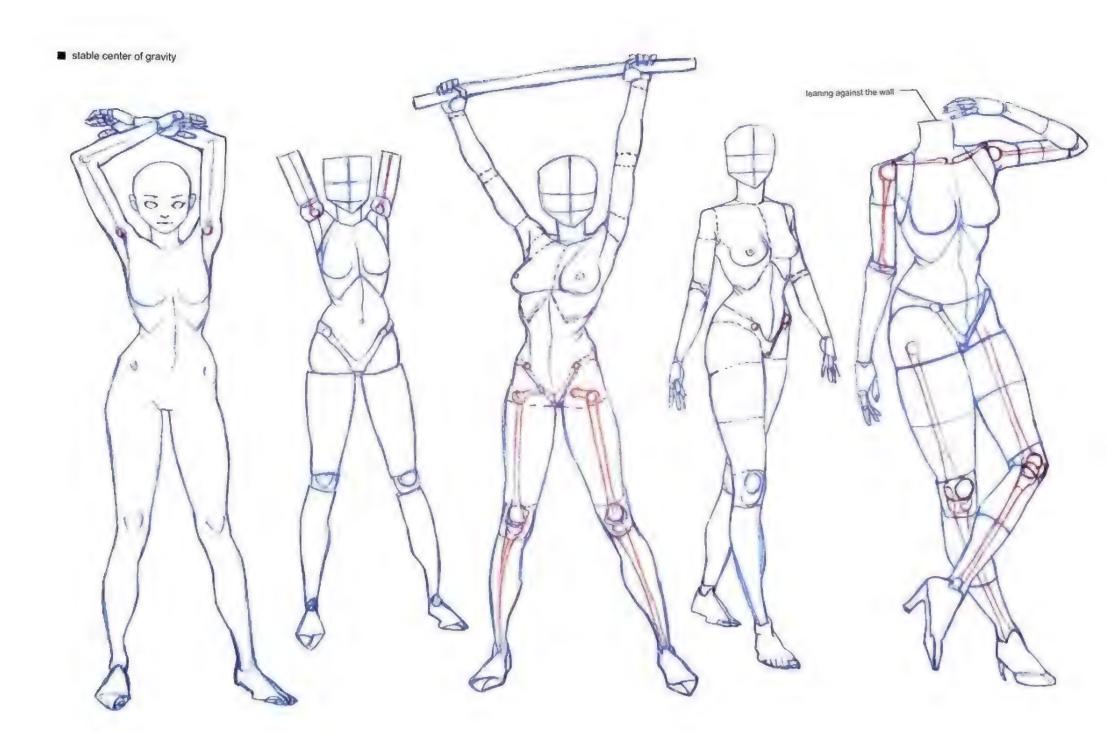


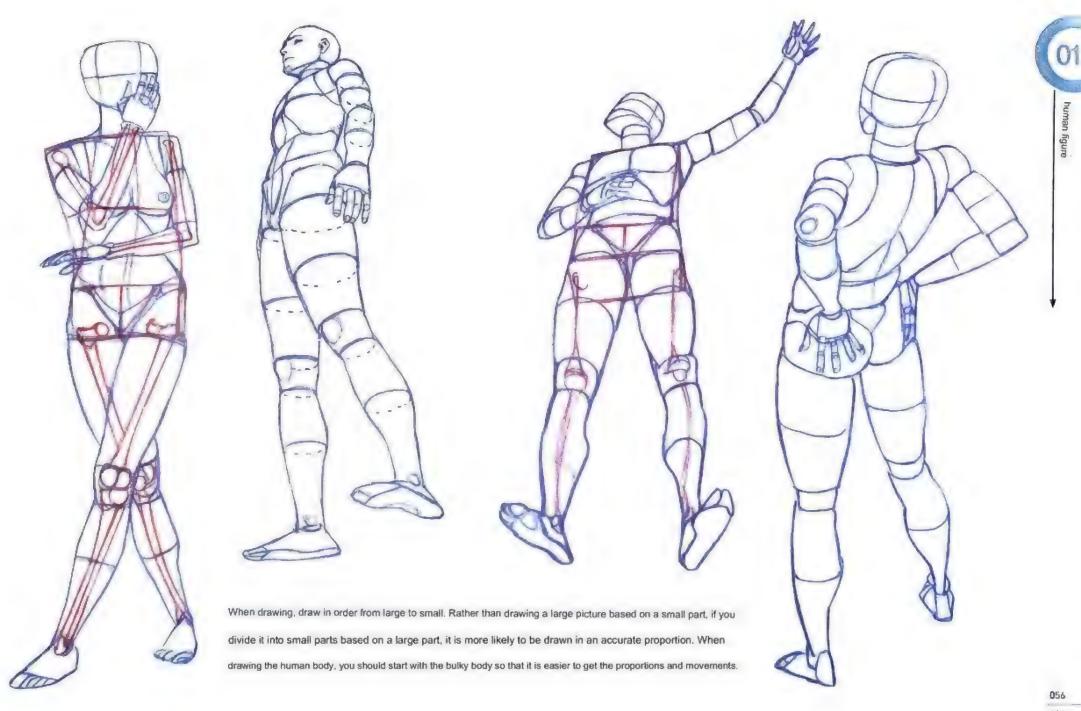
Positioning the center of gravity

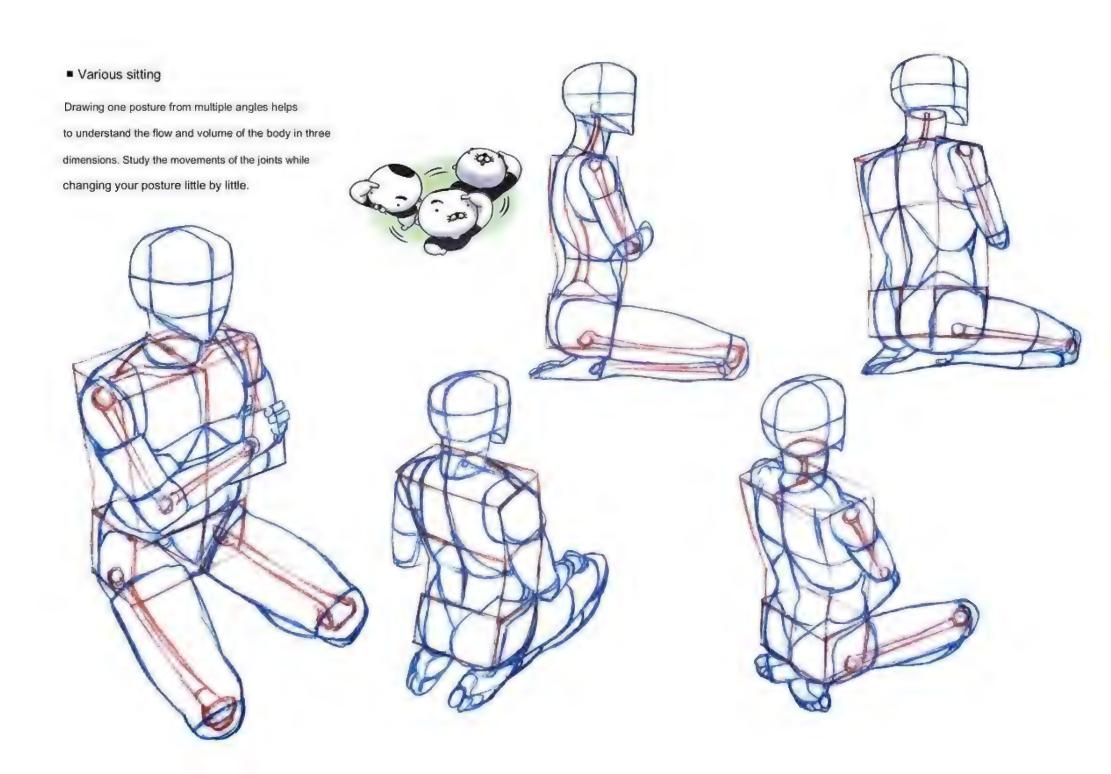
When holding the center of gravity, look at your posture from a side angle, then divide it vertically into two so that the left and right sides have the same weight. The point where the center of gravity line meets the floor is called the 'center point'. In order for the center of gravity to be correct, the center point must be directly touching the foot as shown in Figures 2 and 3, or it must fall over a line drawn between the feet when it does not touch the foot as in Figure 1. There are several ways to balance the center of gravity. Please note that this method is one of them.

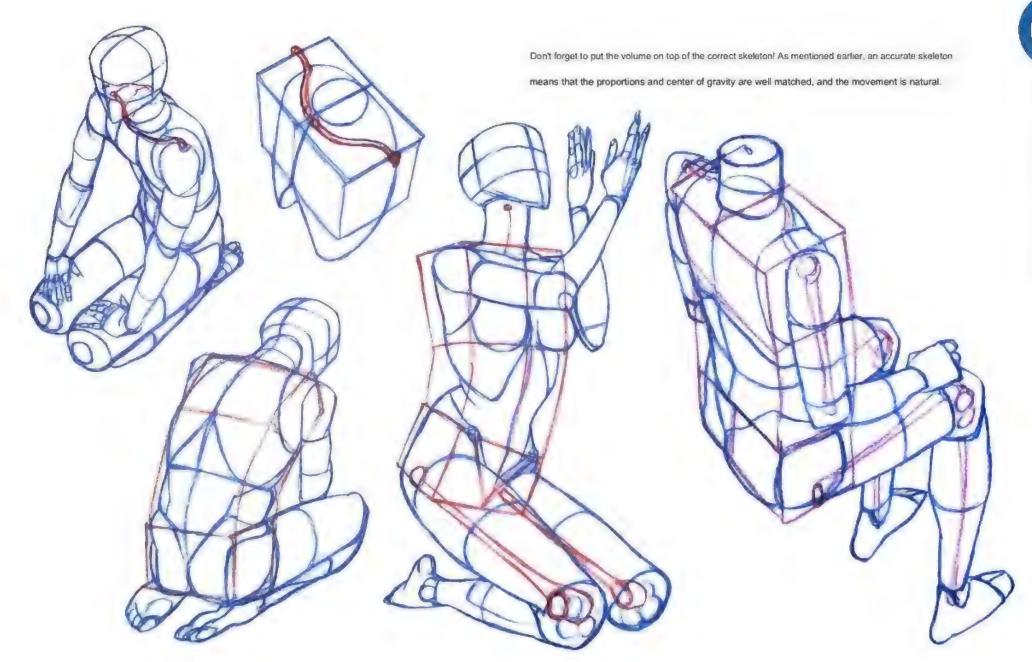


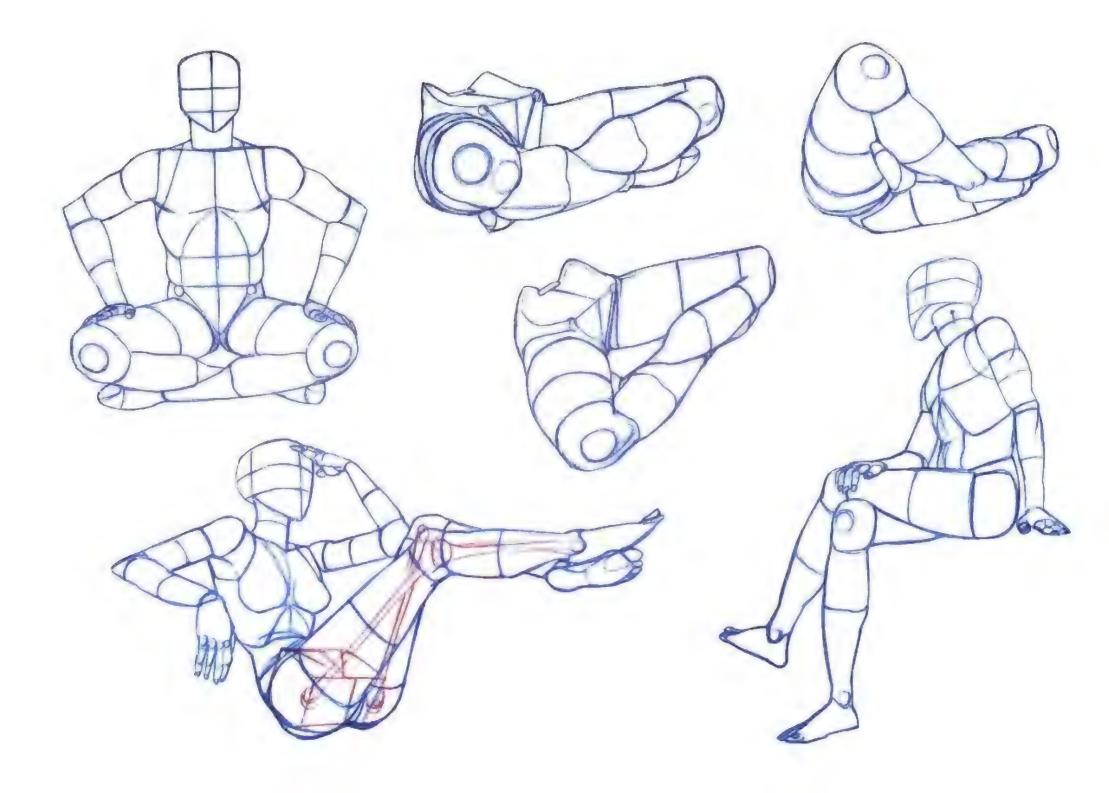












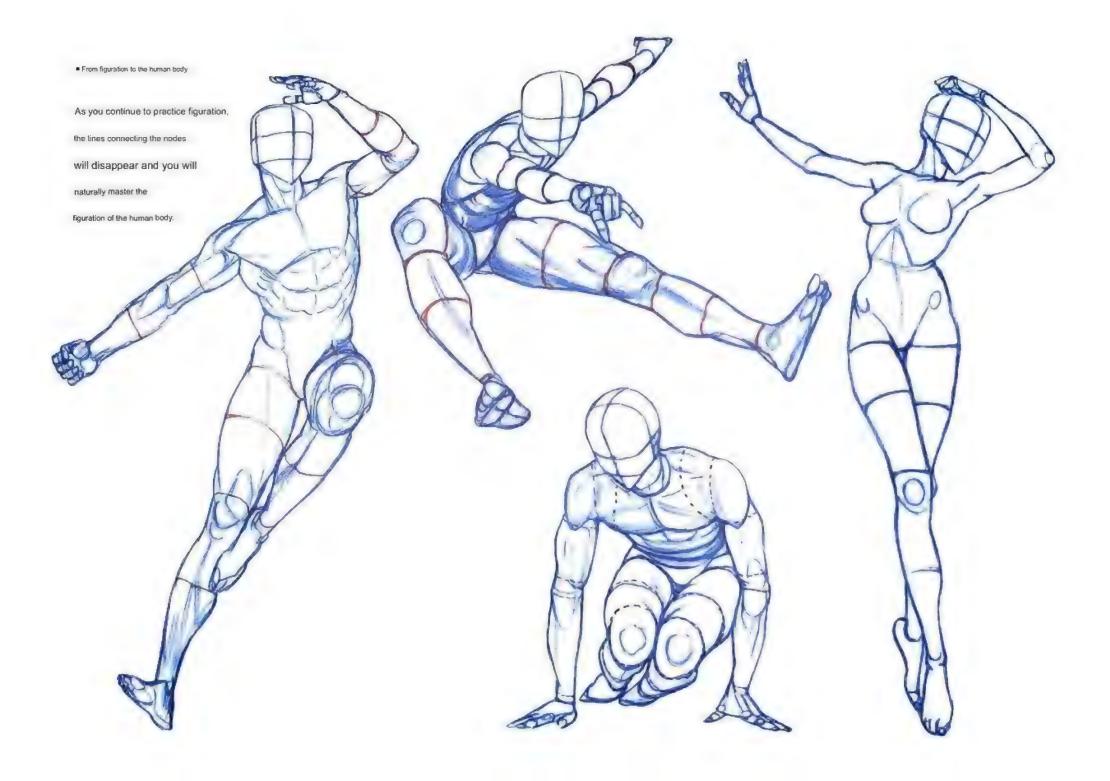




The importance of drawing order

In order to draw a picture with solid basic skills, theory and practice must be combined. If you focus too much on theory, the character will be drawn stiffly. Conversely, if you practice only practical skills without theoretical knowledge, you may find it difficult to draw various postures or compositions due to poor application skills. When practicing, it's important not to try to complete a picture all at once like professional artists do, but to draw sequentially from the skeleton through figure drawing. Professional writers work by mentally calculating skeletons and figures through a lot of practice, not skipping them.





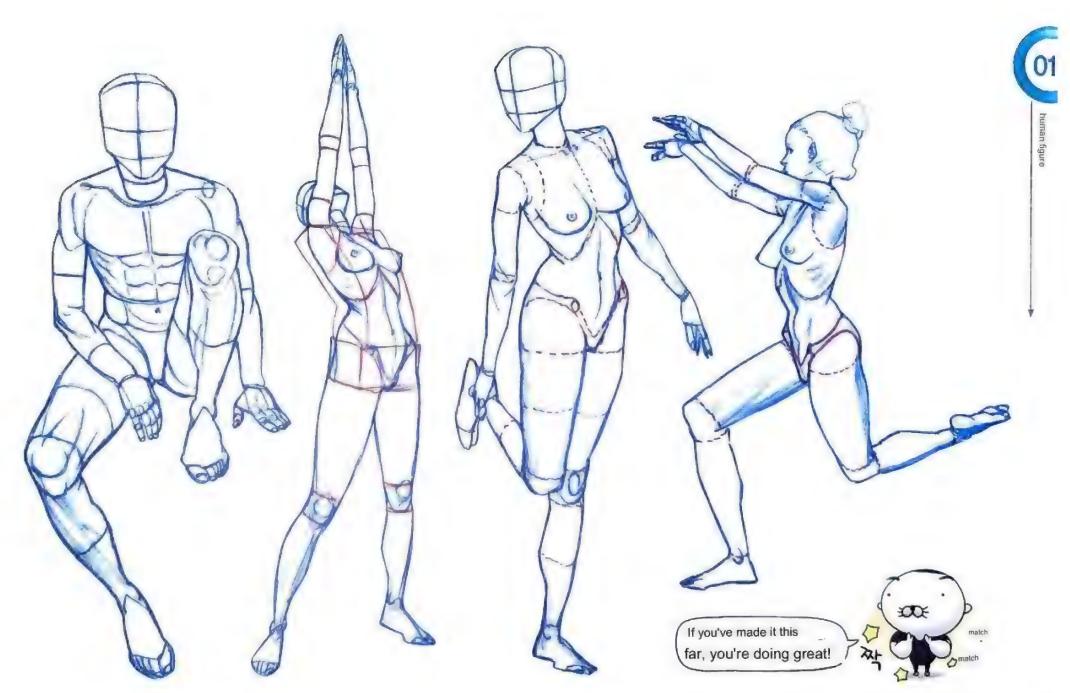
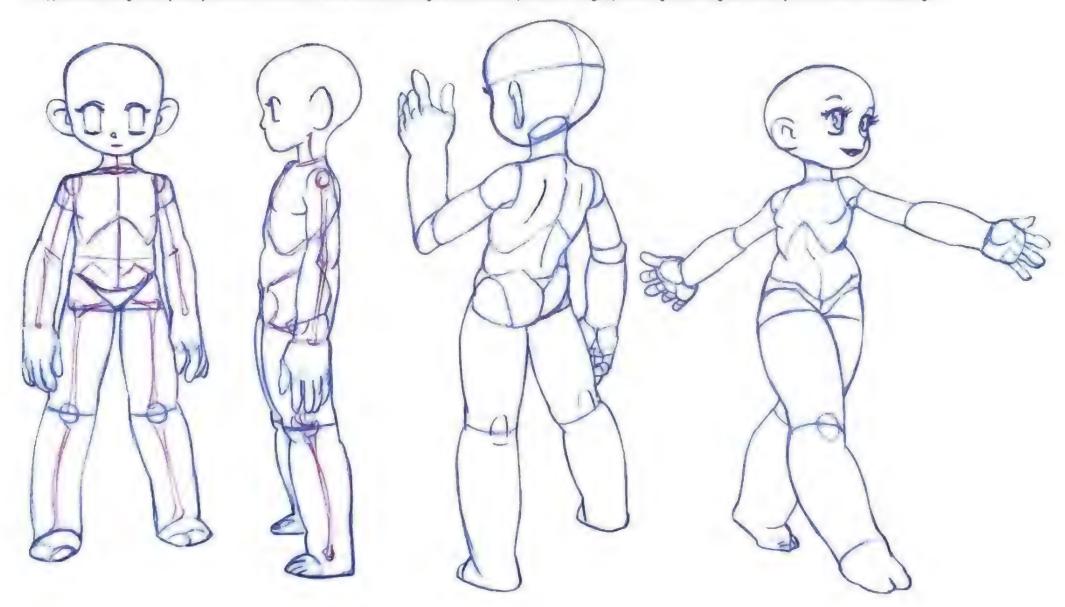
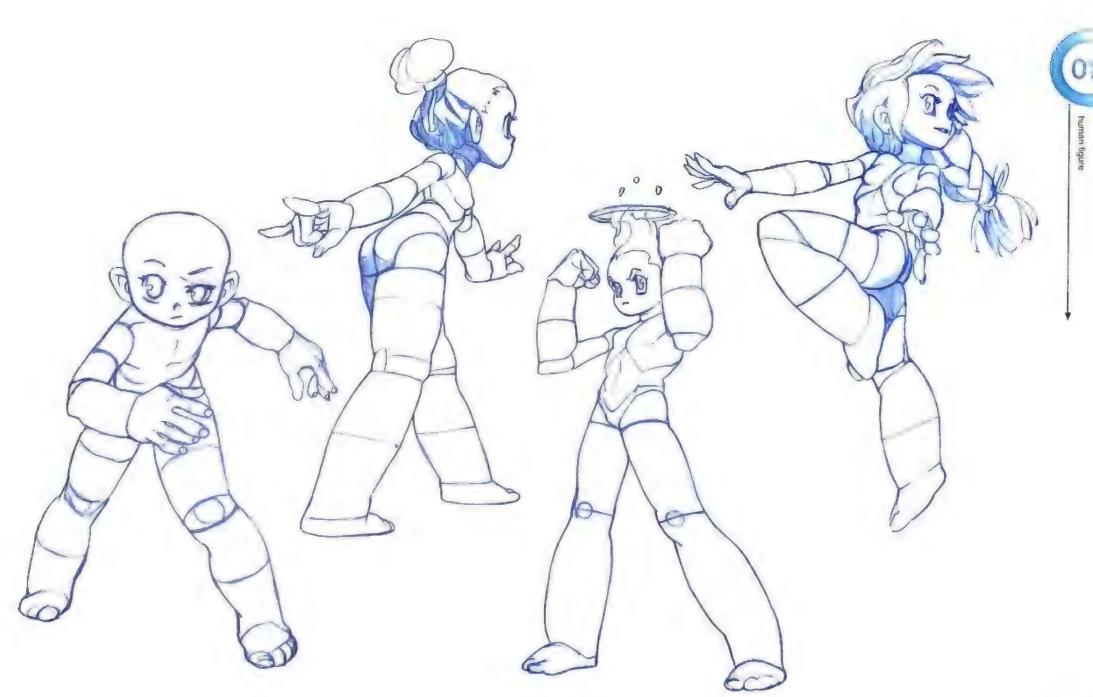


Figure drawing can be applied not only to the realistic proportions of polanzed objects, but also to various drawing objects.

When designing a deformed SD character or creature, you can draw a three-dimensional shape more easily if the figure is the base. If the ratio

or appearance changes every time you draw a character, or if it is difficult to change the character's posture and angle, practice figure drawing to increase your structural understanding!





face recognition

Why is it important to draw faces? Humans, who have lived in social bonds for a long time, have developed the ability to communicate with each other.

For communication, complex interactions through faces were important. To be able to tell who was who, they had to be able to spot differences in appearance and read subtle facial expressions that conveyed emotions and intentions. Community life made us sensitively aware of information about faces. Scientifically, when the human brain sees an object, only the area responsible for vision is activated, but when looking at a human face, most sensory organs such as sight, smell, hearing, and touch are activated at the same time. When we see a face in a picture, our brain reacts as sensitively as when we see a face in real life. The sense of recognizing a face like this is immediate and delicate, so high precision is required to draw a face.

The face is also the most interesting part of the human body. This is because it is a powerful means of expression that can give an impression to a character and directly express emotions. It is also the area where students practice the most. The main concern they have when drawing faces is that they always draw only limited angles. As if the angles of all good selfies are the same. Structural research on the face is required to express an attractive appearance and persuasive facial expression regardless of various angles. In this chapter, we will deal with how to understand the face three-dimensionally by making it a figure so that the shape and proportion do not collapse even from various angles. We will also anatomically study how contrast is created on the face through the structure of the facial bones and which muscles are used when making facial expressions.













Drawing faces is really hard!



Ms. Ana, who covered up the parts she couldn't draw because of her lack of drawing.



Thanks to hard drawing practice,

I came out with the character.



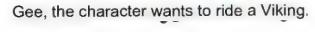
does it?!



I can't draw a low angle face.

Ana is perplexed.

The character learns why he was only at eye level.





I'm going to try the low angle!







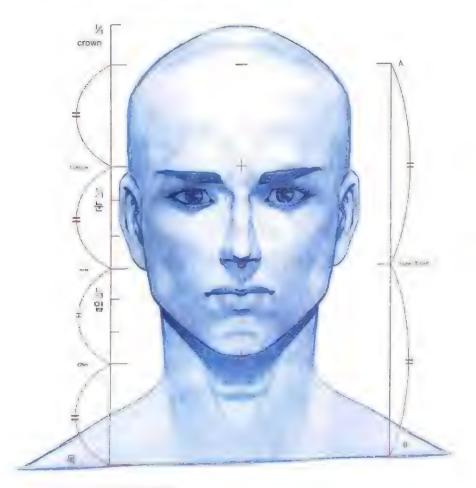
Ana decided to take on the challenge to expand her character's field of activity.

It is confirmed once again that it is difficult to draw an angled face.

Then, let's learn how to draw faces with Rock Sae-saeng!

1 face proportions

Mate facial features and equal parts



male front face proportions

There is no right answer for facial proportions because each artist has a different preference for facial proportions. As shown in the picture above, I put each point in the same equal position to adjust the proportions of the face. Dividing the length from A to B in half is the location of the nose and neck.

The length from the tip of the chin to the collarbone is the point of the neck. The frontal width of the head is narrower than the side width.



The baseline of the fire on the ude of the face.

Parts that protrude beyond the line: eyebrow arch, nose, upper lip

Parts that fouch the line: the starting point of the forehead above the eyebrow arch, the root of

the nose, the point under the nose, the fower lip, and the part that protrudes

forward from the chin Part that is depressed inside the line: the forehead, the

gap between the lips, the lower lip, and the lower part of the chin broten ade



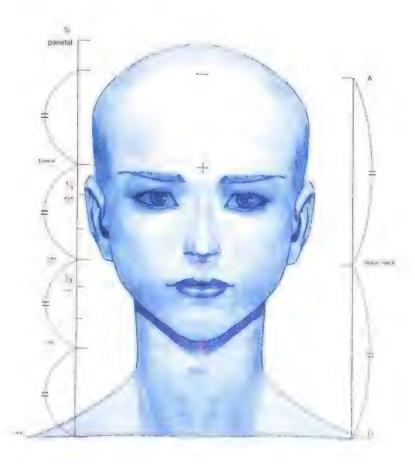
How to measure the width of a feature

One eye goes in between the eyes. The width of the none is equal to the width of the eyes, if you lower the point where the pupils of both eyes start vertically, it touches the corners of your mouth.

The width from the point where the eye ends to the outline of the face is the length of the eye.

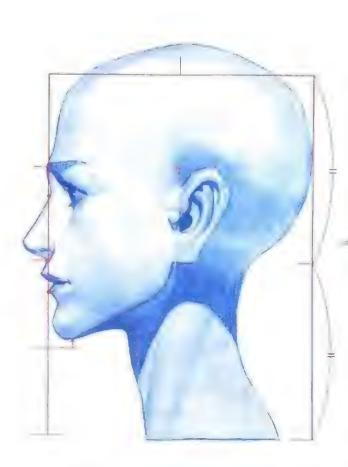


Characteristics and equal parts of a women's face.



Proportion of the female frontal face

Women have wide upper eyes and a short chin, giving the impression of a baby face. Women have thirmer chins than men due to hormonal influences. The size of the ears is equal to the distance from the eyebrows to the nose, and the eyebrows are drawn longer than the length of the eyes.



Facial features seen from the side

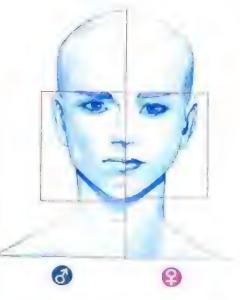
When viewed from the side, the slope of the nostrils is horizontal, but

the slope of the lower part of the nose is not. In women, the protrusion

this of the arch of the eyebrows is more gentle, and the starting point of the bridge

of the nose is lower. Also, the lower jaw is less developed than that of

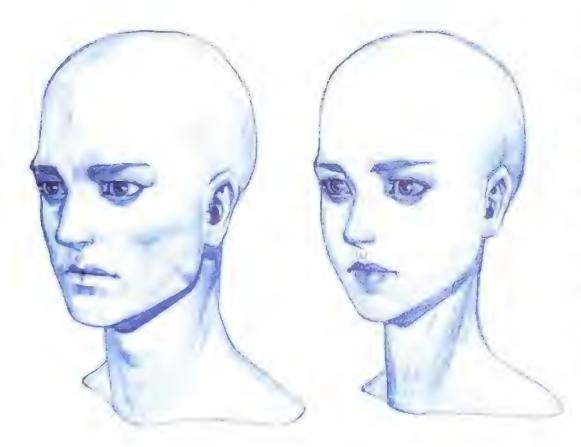
men, so the protruding point of the chin does not reach the reference line of the side of the face.



Milliograph & Softwaren in sole bind Services Ages

If you directly compare the frontal faces of men and women, you can see at a glance that the length from the upper eyebrows to the tip of the chin is shorter in women than in men. The flow of the chin is straight for men and curved for women. The length of the neck is the same in men and women, but women appear longer due to the thin neck and low height of the trapezius muscle.

■ How is a standard face made?

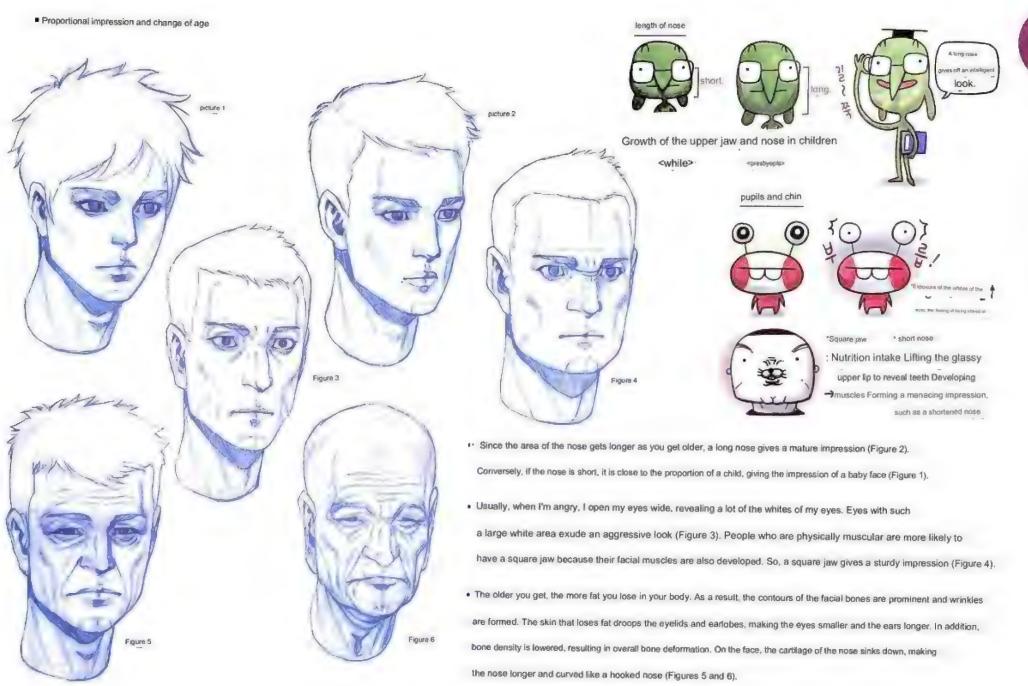


Facial characteristics of Westerners and Asians

The shape of the face is developed in various ways depending on the climatic environment, topographical characteristics, and race, so there are many differences in the form. Westerners have developed eyebrow arches that play a role in forming shadows to protect the eyes from direct UV rays in the plains. In addition, the colder the region, the more watery the eyeballs must be protected with body heat to prevent them from freezing, so the eyes went inside, and the nose became higher as the breathing tube was lengthened to warm the cold air. As a result, Westerners' features form three-dimensional curves. Asians do not develop eyebrow arches because the forest blocks sunlight. The eyes are protruding and the lips are thick to release the increased body temperature due to the tropical climate, and the nose does not need to be high, so the overall face is flat. Even in the shape of the skull, there is a difference in three-dimensional effect, with Westerners having a long head in the front and back, and Asians having a flattened "short head" on the side. In painting, a face that properly mixes Eastern and Western characteristics is preferred. Rather than drawing multiple faces with different impressions from scratch, it is better to try various changes in impressions after practicing enough to maintain proportions from the front, side, and half-side angles of a standard face.

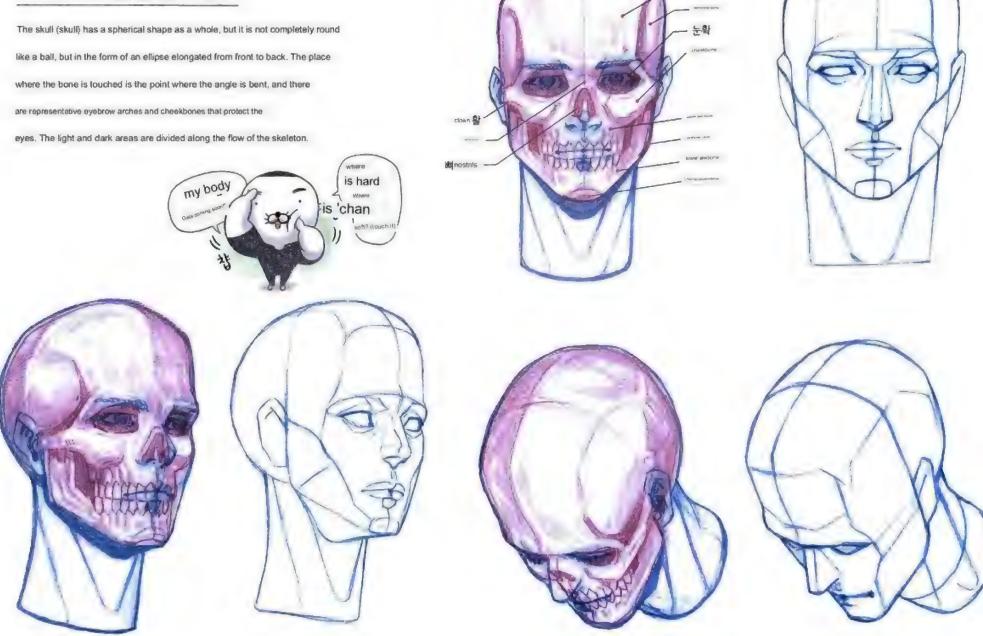


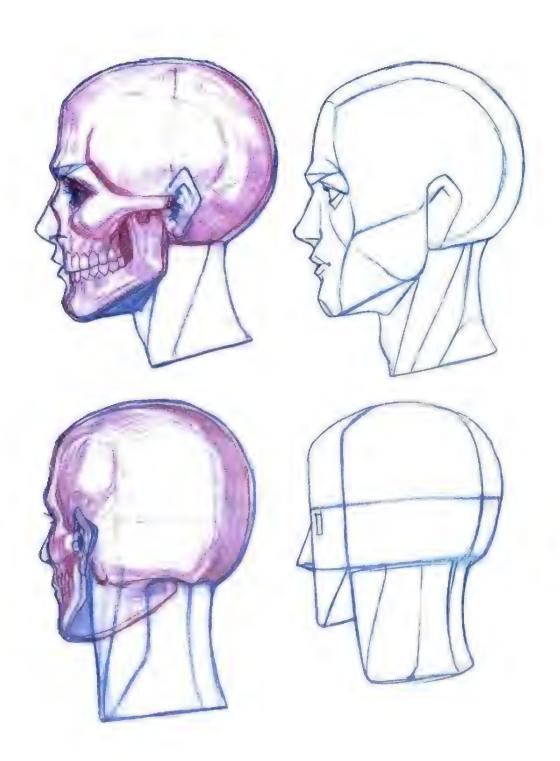




2 skull

You need to know the skull to know where it bends













There are no sharp edges on the face, so why study each side?



It is difficult to understand the three-dimensional effect if you approach the face only with a round face. So when I need to add light and shade or draw various angles, I end up evasive about the shape. Sectioning is effective for structurally and clearly understanding complex shapes. Divide the face by omitting fine bends and grouping similar areas together. After catching the big flow, I gradually cut the angle to make a real face.

Understanding the form

structurally as if learning from each side of the plaster statue in basic painting!

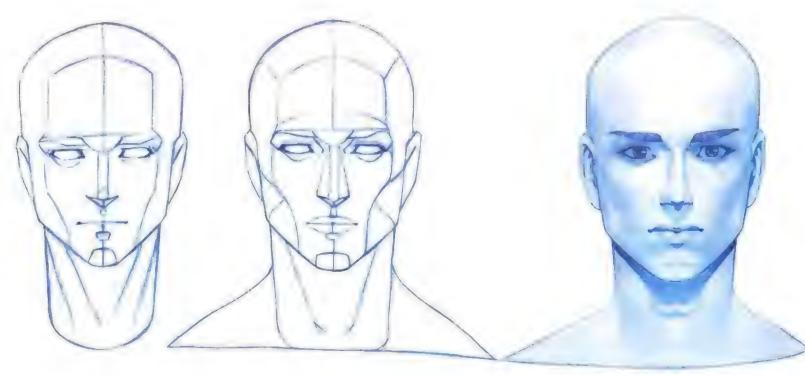


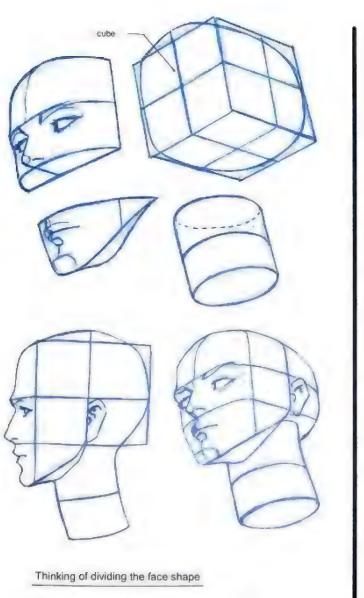


order of facets

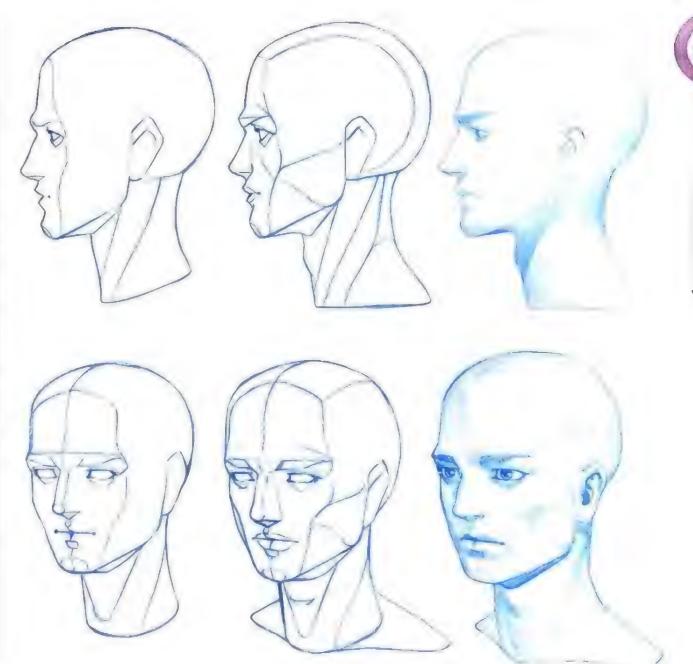
First of all, let's find out the basic
structure of the face by dividing the
face into front and side parts after
setting the exact position of the eyes, nose,
and mouth. Based on the front
and side, the face is subdivided along
the detailed muscle flow.
There are many areas that are split around the

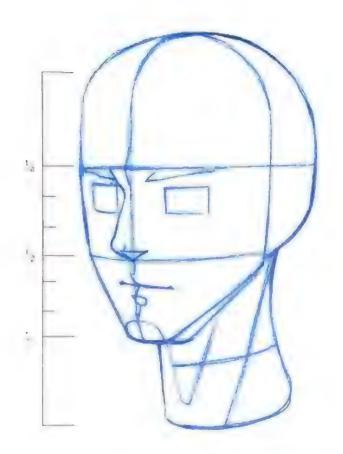
cheekbones, eyebrow arch, and nose.

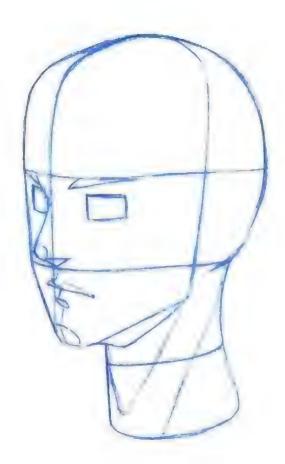


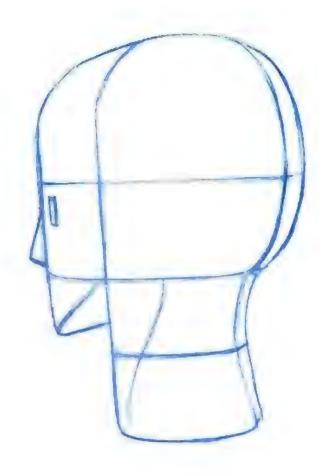


It is easier to understand the structure if you divide the face shape into four parts centering on the head made of cubes.







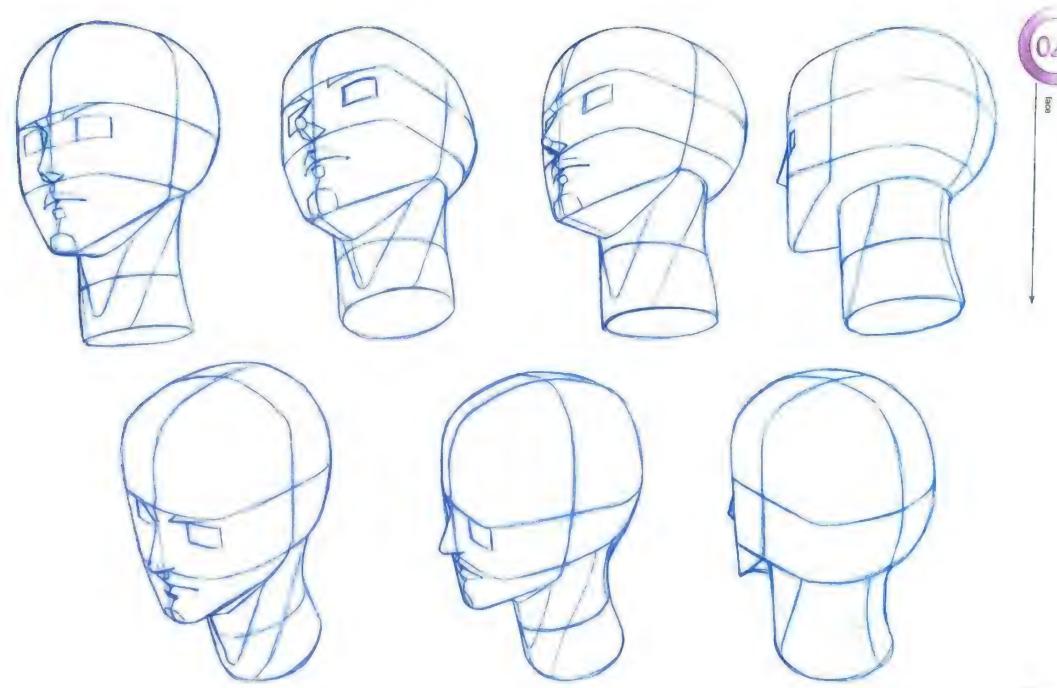


Simplifying the shape of the head by focusing on volume

Just as I did with the bulky torso when drawing the whole body, I draw the bulky head first for the face. Place proportional lines horizontally at the eyebrows and nose, and draw vertical center lines on the front and side of the face. These lines serve as guides for drawing, recognizing exactly which angle the face is facing. If the shape of the eyes is square, it is easy to measure the symmetrical position of the eyes, the tilt of the eyes, and the length of the eyes when the face is rotated.

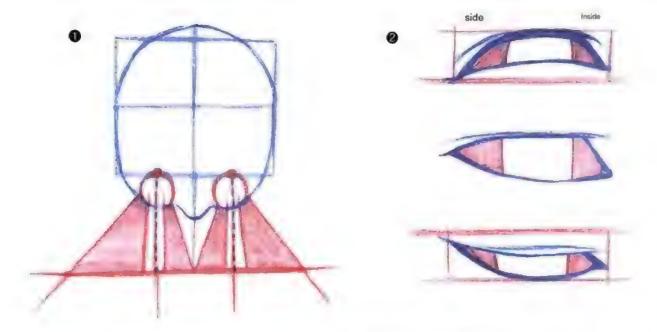
Practice figure drawing white observing how the proportions and inclination change depending on the various angles of the face.



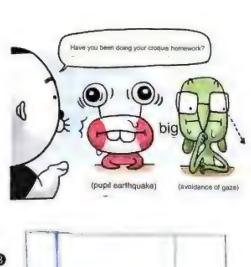


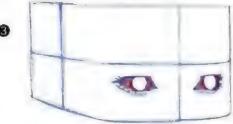
- 5 Shapes of eyes, mouth and nose
- Understanding the eye three-dimensionally

Humans are the only species with wide eye whites. Animals are at a disadvantage in survival because they can easily see where they are staring if their whites are clear. When hunting, your opponent can read your inattention, your emotional agitation, and the direction you're moving. On the other hand, humans have come to have wide white eyes in order to take that risk and communicate by exchanging glances in group life.

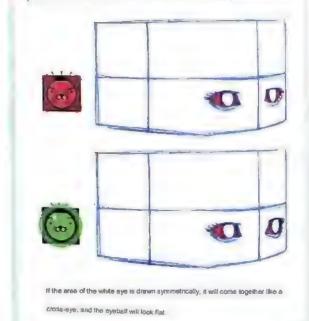


- Since the nose is blocking the eyes, the angle of view does not need to be wide inward, so the tails of the eyes are torn laterally.
- ② The eyelids cover the spherical eyeball, so it looks like a crescent moon when viewed from above or below.
 The point here is that the inner and outer sides of the eyes should be drawn asymmetrically due to the outer comer of the eyes.
- When the angle of the face is changed, the lateral corner of the eye of the opposite eye turns to the opposite side, shortening the width of the eye. Be careful not to draw both eyes symmetrically from an angle that is not completely frontal.





Incorrect answer note Shape of both eyes on the half side



eye of the east



In Asians, the angle between the upper and lower eyelids is perpendicular.

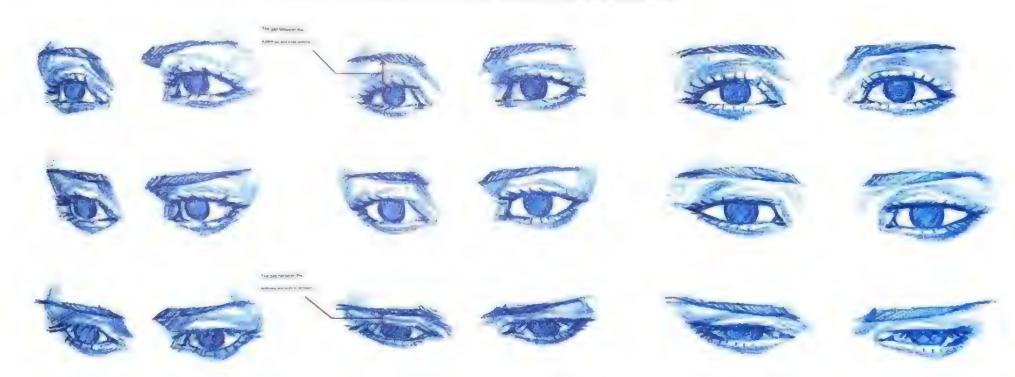
For Westerners, the eyebrow arch should protrude and be drawn with an oblique angle.



Characteristics of eyes according to angle

Looking up from below, the distance between the eyebrows and eyes widens. Since the thickness of the eyelids varies depending on the viewing angle, the flow of the eyelids covering the eyeball must be carefully studied.

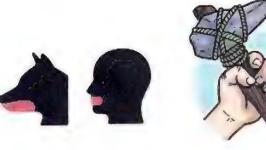
When viewed from above, the distance between the eyebrows and the eyes is shortened, and the eyelashes cover the eyes. Be careful not to darken the lower lashes.



■ Why does the mouth look like this?

Why is the human mouth small?

As humans began to use their hands, their snouts became shorter as they no longer needed to bite their prey, and as they stored food and did not have to eat large amounts at one time, their mouths became smaller. The lips are the part that releases body heat, and they are thick because they have enough flesh to open the mouth. An important point in understanding the shape of the mouth is the structure in which the lips are rounded along the top of the teeth, which are curved like a horse's hoof.



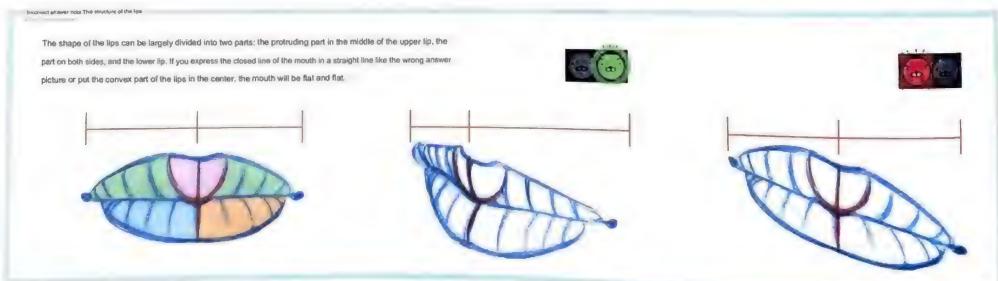


upper and lower lips

Why does the upper lip protrude more forward than the lower lip? This is not because the upper lip is thicker, but because of the way the upper teeth cover the lower teeth.

Occasionally, when the lower teeth cover the upper teeth due to malocclusion, the lower lip also protrudes more than the upper lip. For reference, the reason why the front teeth are visible when the lips are slightly parted is because the position where the lips meet is in the center of the upper teeth.

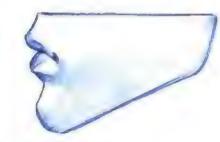




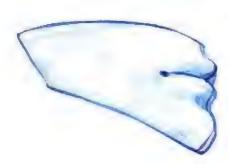


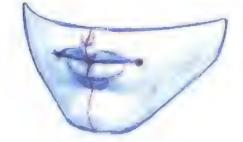


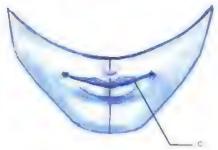




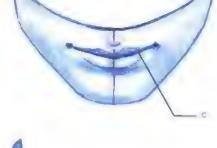


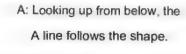












Different lip shapes depending on the angle

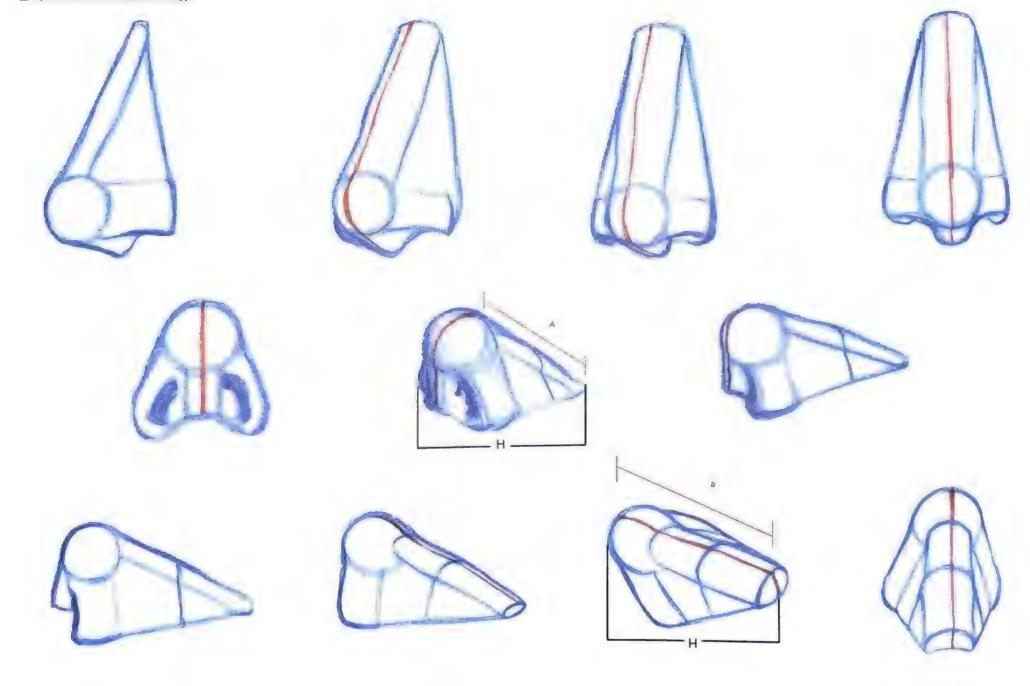
B: When the mouth is closed, the upper and lower lips are It is a line that touches.

C: When viewed from above, the shape of the upper lip

A line follows.



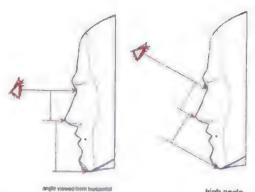
Split the face to understand the nose

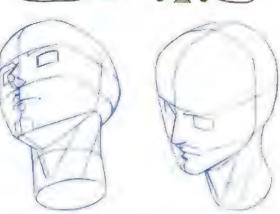


The nose, which rises the highest on the face, is a part that stands out for its three-dimensional effect. Since it is at the center of the face, it serves as a reference fine to determine the direction of the face. As shown in A on the left page, at a low angle, the bottom of the nose is visible and the length of the bridge of the nose is shortened. Like B, in the case of a high angle, the length of the bridge of the nose is not shortened due to the sloping characteristic, resulting in a long appearance. Let's take a closer look through the picture.

Changes in the length of the nose according to the angle

At an angle looking at the face horizontally, the length of the nose looks shorter than the length from the tip of the nose to the tip of the chin, but in a high angle, the length of the nose and the length from the tip of the nose to the tip of the chin appear almost the same. If you look at the face from a high angle like this, you can observe that the length of the nose is relatively long.





When the nose is

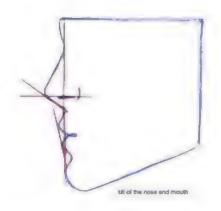
proken, this land of accar is formed on

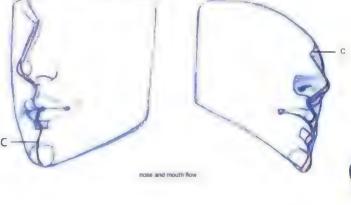
the cartriage side

high angle Shortened low-angle nose

High-angle nose with no shortening

The angle of the face where the buy of the nose and





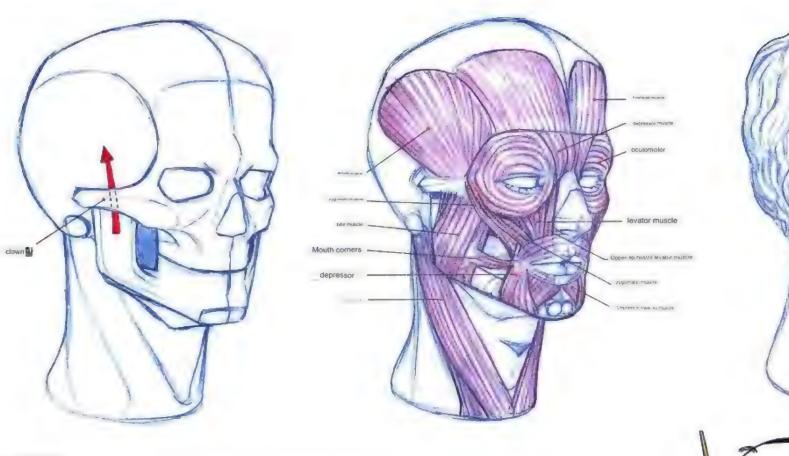


connection between troop and roach

Understand the shape by comparing the inclination of the nostrils, the inclination of the underside of the nose, and the inclination of the upper and lower lips. Take a close look at the flow of the hill created by the combination of the nose and lips through C, the central line of the face. When drawing a half-side face, if you can structurally understand and express the green area beyond this most protruding part of the face, you have a high level of understanding of the face structure!

6 Facial muscles and expressions

Why are there so many muscles in the face?

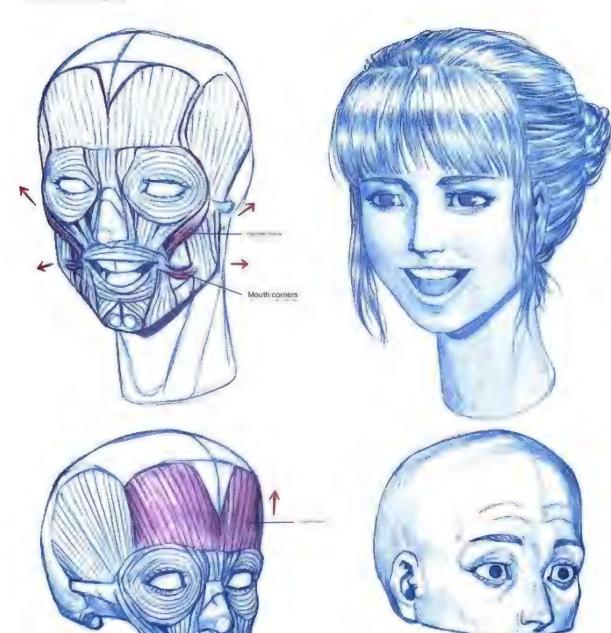




The empty space between the zygomatic arch and the skull, which runs from the cheekbones to the ears, creates a passage for the muscles on the side of the forehead to the lower jaw. Also, by looking at the grain direction of muscle fibers, you can tell in which direction the muscle contracts, so you can predict the use of the muscle. Many muscles are connected to the corner of the mouth, so the corner of the mouth rises thickly. The muscles related to expressions are not attached from bone to bone, but from bone to skin, so the skin is pulled to create facial expressions. The attachment of muscles from bones to skin is a characteristic that can only be seen on the face.



■ Features of a smiling face



muscles used when laughing

The muscles that are typically moved when smiling are the zygomatic muscle and the puller of the mouth tail. The reason why the nasolabial folds form and the cheekbones protrude convexly is because the fat is pushed. The clown's flesh pushed up also affects the eyes, creating half-moon-shaped eyes. When smiling, it is natural for only the upper teeth to be visible. When the lower teeth are visible, it is easy to give the impression of a fake smile or to be seen as a maniac smile.

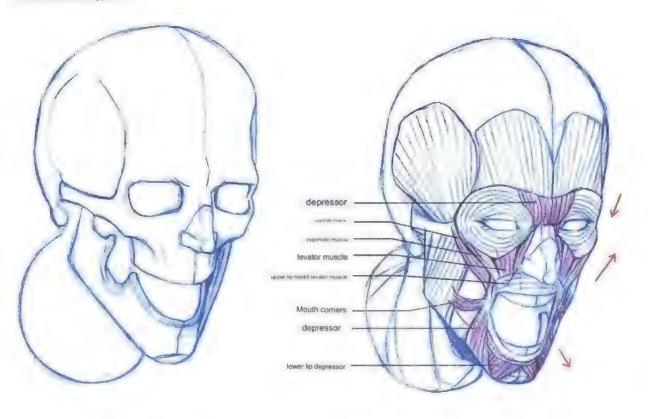


The foreheed muscle that ruses the eyebrows

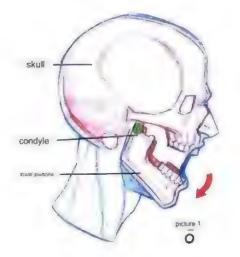
If you look at the elderly, you won't find anyone without wrinkles on their foreheads.

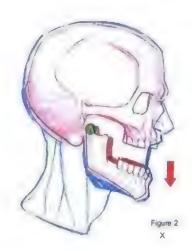
You can see that since we are young, we make a lot of facial expressions with raised eyebrows. With a little awareness, you can see that the forehead muscles are used not only when looking up at something or making a surprised expression, but also in various facial expressions. Wrinkles on the forehead are caused by the contraction of the forehead muscles and overlapping of excess skin. Even now, you are probably unconsciously contracting your forehead muscles.

Characteristics of an angry face







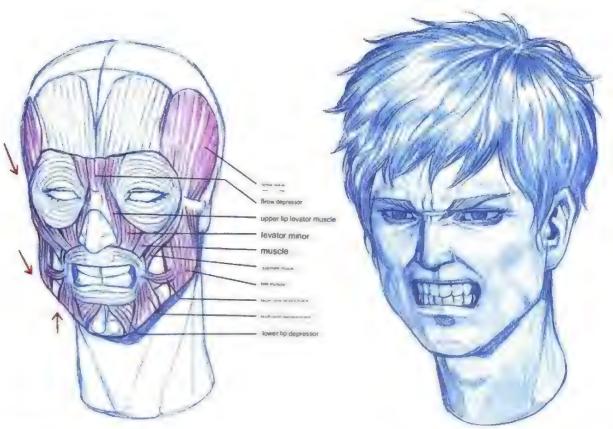


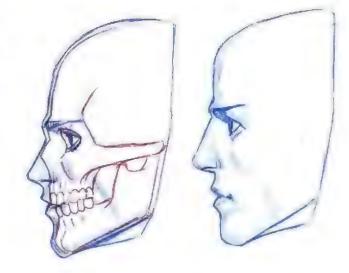
shouting expression

A frowning, yelling expression uses more muscles than a smiling face. The point of this expression is the movement of the temporomandibular joint. As shown in Figure 1, when the mouth opens, the lower jawbone should draw a curve around the articular process. However, many students often make the mistake of opening their mouth vertically rather than in a curved motion as shown in Figure 2. The anatomy of the bone suggests that this is an impossible movement, as vertical opening of the mouth causes the temporomandibular joint to fall out. Keep in mind that the articular process is the joint that connects the skull and the lower jaw, so it should not be dislocated.









If you bite your teeth hard, the masseter muscle will stand out.

Showing teeth and making an impression

This is the most muscled expression out of all the ones I've seen so far. This expression of threatening the opponent by exposing the teeth while biting the molars tightly is also observed in other animals. The reason why all animals have more strength to close their mouths than to open them is to bite prey or chew food. As a result, the amount of muscle that closes the mouth is far greater than the amount of muscle that opens the mouth. As you can see from the expression above, you can see that when the mouth is closed, it feels more threatening than when the mouth is open. The muscle that closes the mouth is divided into the temporal muscle and the masseter muscle. The temporal muscle has the endurance to close the mouth lightly, and the masseter muscle exerts strong muscle strength when chewing something hard.



<Weak Jaw Movement>

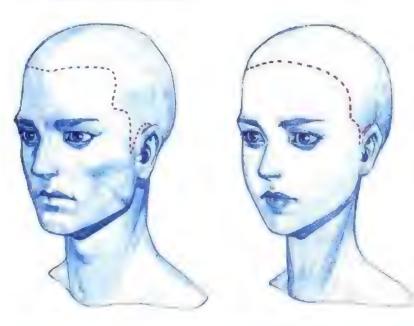
Temporal contraction



<Strong Jaw Exercise> Temporal

muscle + Masseter muscle contraction

7 natural hairstyles

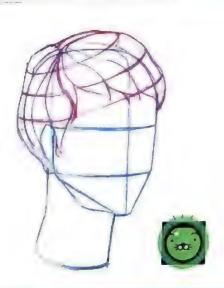


When drawing the head, be aware of the shape of the head and draw the volume of the hair to avoid the mistake of drawing the hair into the head or overly floating. The line where the hair starts is also different for men and women. Men have an angular M-shape, and women have a round border.

When expressing the hair, do not draw it as if planting it one by one, but hold the entire hair in a large lump and divide it into smaller strands toward the end. It's because the hair is tied up in a bunch and overlaps. Bundles of hair extend from the whorl or part to create a regular direction.



Incorrect answer note Volume and direction of hair

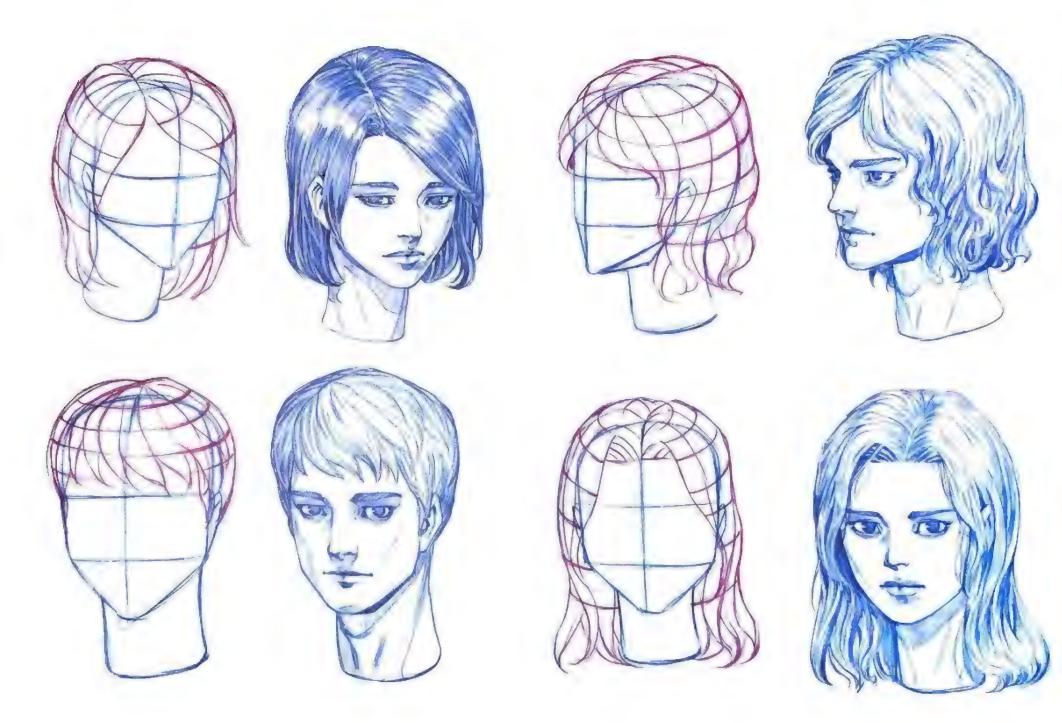




Since the hair is layered and piled up on top of the head, we need to add volume to it. If you draw it right along the skull line, it will look thin and sparse. As for the direction of the hair, it is necessary to draw a large flow centered on the hair part or hair part before entering the description.

These characteristics are more important for characters with long hair, right?





different hair styles

The location of the whorl and part has the biggest impact on the hairstyle.

Depending on the hair length, professional design elements are added, so do not try to create a style with your imagination, but refer to professional hair materials to express a sophisticated style that suits the times.



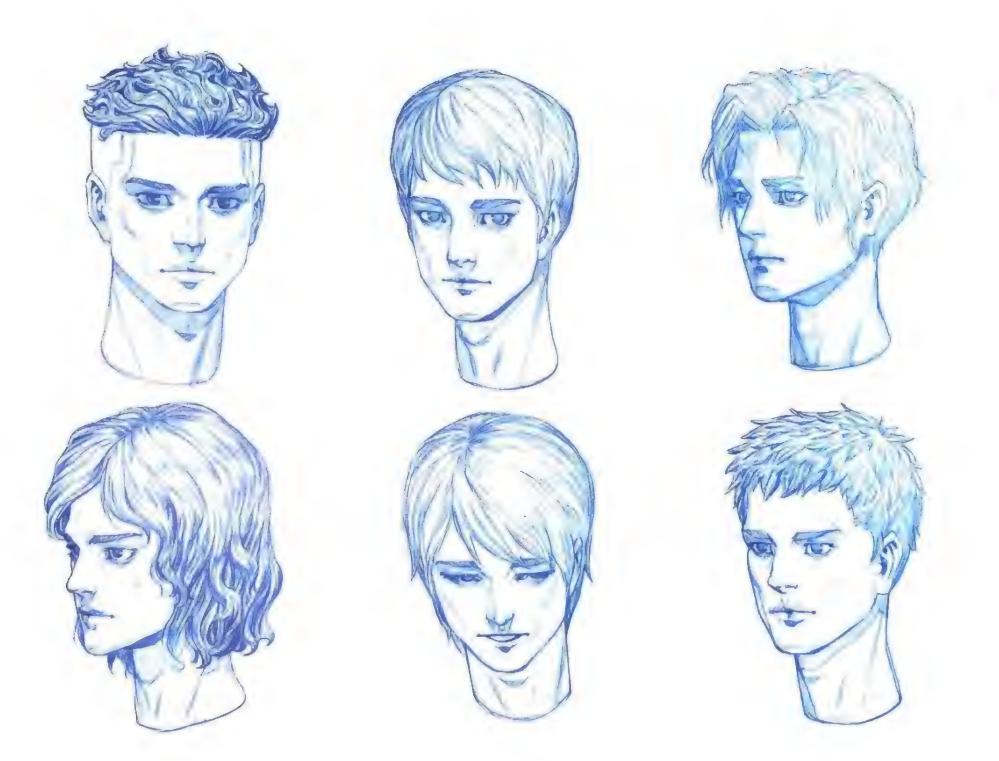




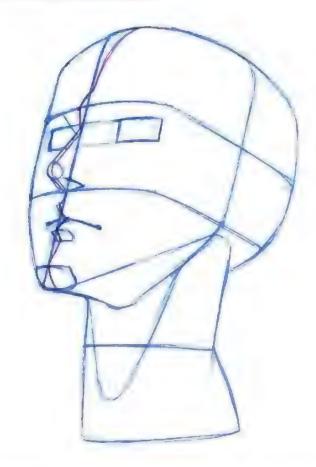








3 Rotate various angles





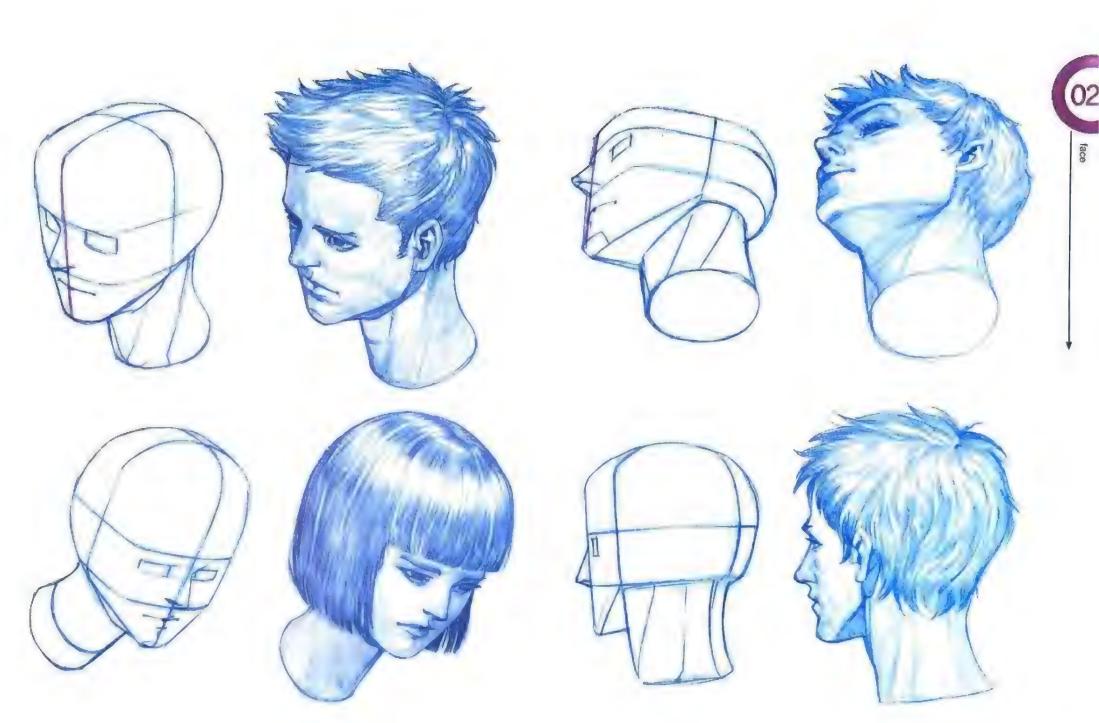


We recognize faces more precisely than other objects. In addition, since the shapes of the eyes, nose, and mouth that make up the face are complex, an understanding of the exact proportions and shapes is required when turning the angle. No matter how accurately you understand the shape of each eye, nose, and mouth, you cannot draw vanous angles if you lack understanding of other areas of the face. In order to understand the area that connects the eyes, nose, and mouth, it is necessary to go through the figure drawing stage based on the skeleton and develop into individualization. When drawing a face, first determine the direction of the face, draw the overall volume of the head accordingly, and adjust the proportions and positions of the eyes, nose, and mouth according to the angle. In order to include the contrast of the polarized body, it is necessary to understand the flow of the facial skeleton from each side.



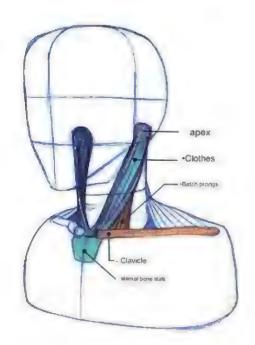


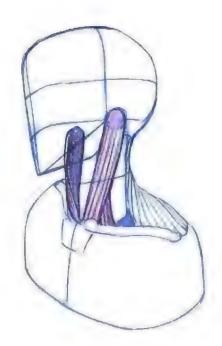


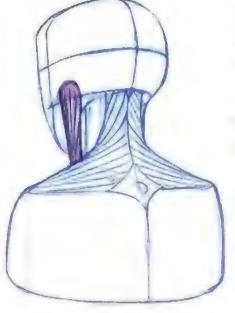




 $\boldsymbol{\pi}$ The most prominent devices oblique muscle (stemoclaidemestrid muscle)



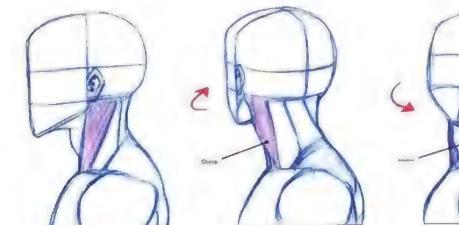




starting point and ending soul

Touch the back of the ear once. Are the bones protruding convexly? This is called a 'top turn'. The cervical oblique muscle is divided into the 'collateral fork' that starts from this top process and goes to the sternum and attaches to it, and the 'clavicular fork' that leads to the clavicle.





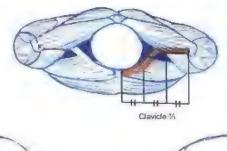
use

It works by turning the head left and right and leaning forward.

and the same of th

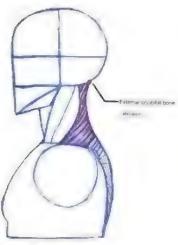
The cervical oblique muscle has the greatest influence on the outline of the neck and has a prominent sense of thickness, so it is an important indicator that cannot be left out when expressing the neck. There are several muscles in the neck besides the cervical oblique muscle, but it is not very visible on the outside, so it is natural to express only the cervical oblique muscle and trapezius muscle and tie the rest into a cylinder.

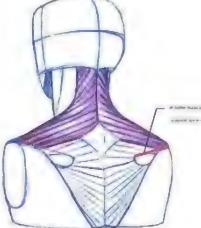
Upper trapazion muncle resembling a bridge (trapazios muscle)

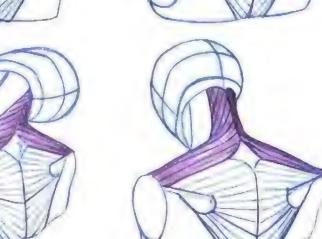


shirting point and ending point

The upper trapezius originates from the external occipital eminence and attaches to both scapular spines and the family branches of the clavicle. We will learn more about the entire trapezoid later.

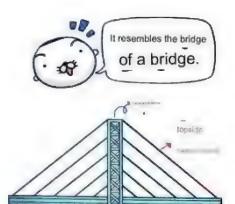








The upper trapezius muscle lifts the head, tilts it sideways, and rotates it, and connects the collarbone and scapula to the cervical vertebrae to support the shoulders.

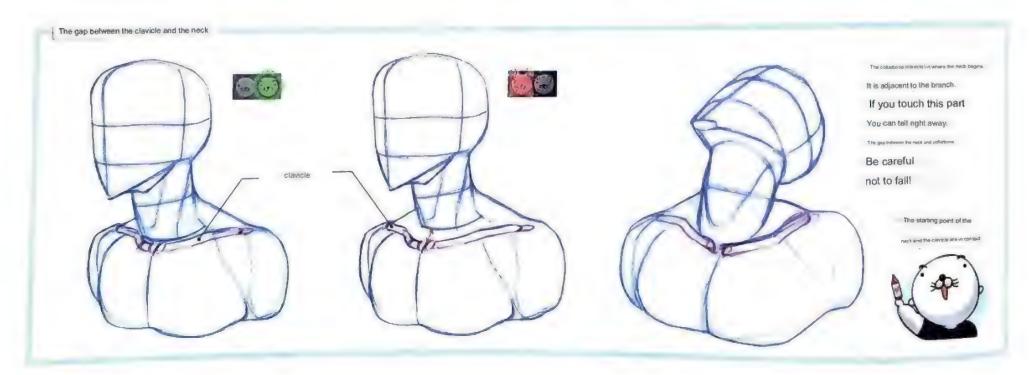


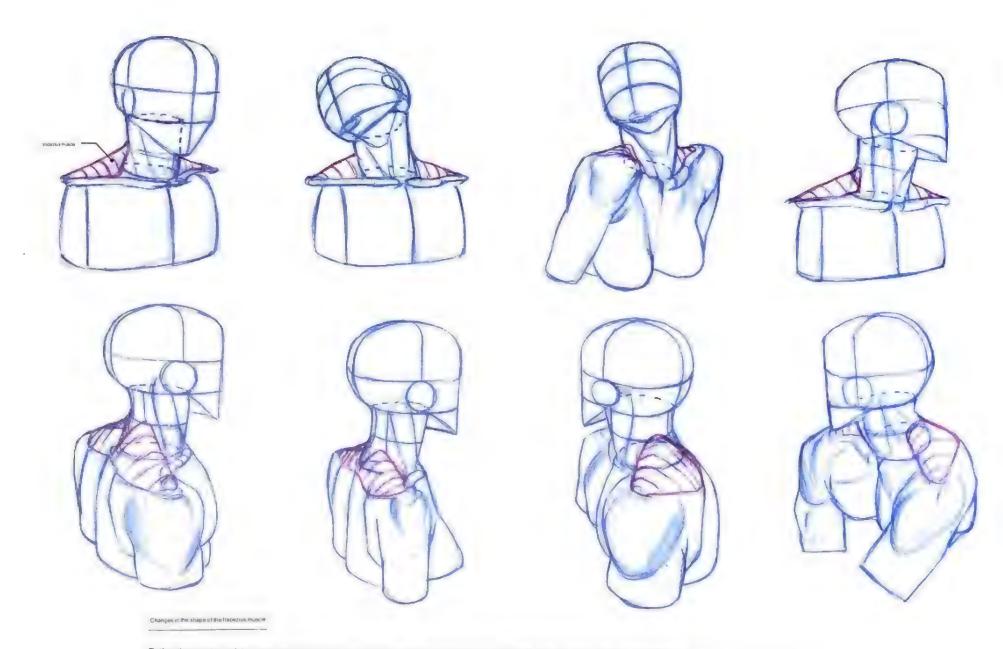
& collarbone and

* Easily understandable neck movements



The joints of the cervical vertebrae are located in the center of the neck. When you lift your neck backwards more than when you lean forward, your neck bends more, and wrinkles form on the nape of your neck. Bending the neck back and forth causes changes in the apparent length, so you should always think about the movement of the neck based on the skeleton, which is the center. When moving the neck, the joint bends the most around number 2. The joint in area 2 does not bend much, so it only serves to assist the movement of the joint in area 2. When turning the head left and right, the left and right rotation movement is performed around joint 1.





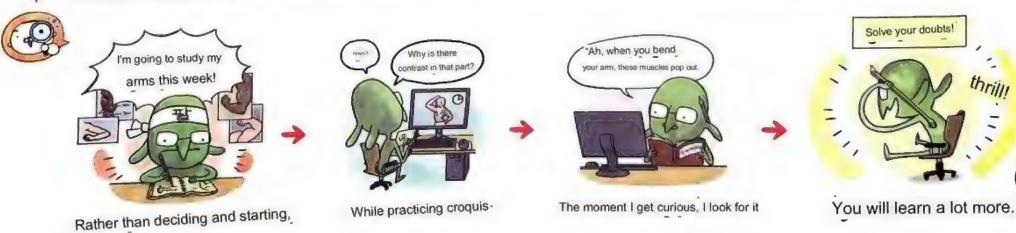
Rather than thinking of the connection between the neck and trapezius as the same flow, it is better to view the neck as a cylinder and think

of the trapezius as an unfixed form as shown in the picture. This is because the shape of the trapezius muscle changes depending on the position of the tip of the shoulder.

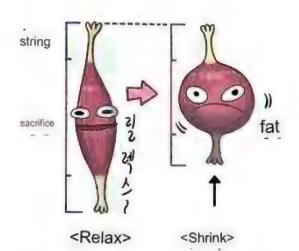
structure and action of muscles

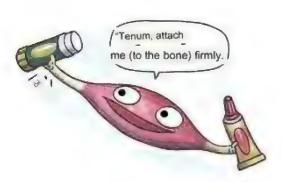
Why did Leonardo da Vinci and Michelangelo devote themselves to anatomy even though they lived in an era when human dissection was taboo?

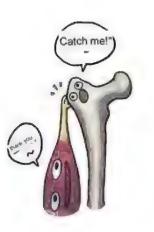
Even though I made the work with a real model in front of me. The two artists felt limited in creating works with only superficial information. In the end, I was able to dramatically improve the level of description of the human body by directly studying the internal structure of the human body. If you rely only on reference materials without understanding the structure, it will take a lot of time to find the right materials for the posture or angle you want to draw. Also, it is possible to draw the human body incorrectly by looking at the mode's unusual body shape, or the shape that looks incorrect due to the angle of the lighting. Those who draw illustrations or cartoons should be able to create and draw characters with various angles and postures without a model. In other words, it is essential to know the structure and working principle of the human body. There are some educators who say that there is no need to put a lot of emphasis on studying anatomy. Rather, by studying anatomy, we harm the naturalness of the human body. From the point of view of writing a human anatomy book, my opinion is that you should not study the human body only with anatomy, but anatomy is an indispensable subject in order to properly create the human body. Of course, drawing the human body with an overly focused focus on anatomy will result in a hard drawing of the human body or an unnatural flow, as the educators mentioned above claim. However, you should not neglect your anatomy study because you are concerned about these side effects. This is because in order to draw the human body naturally, it is necessary to study anatomy in depth and then be able to apply it to the situation. Therefore, I think it is a good attitude to study anatomy with the mindset of I will study it properly and then apply it as needed rather than 'I will not do it at all if I cannot do it perfectly'. A high level of understanding of the human body will be a solid foundation for you to express what you want to draw without hindrance. We will open the ch









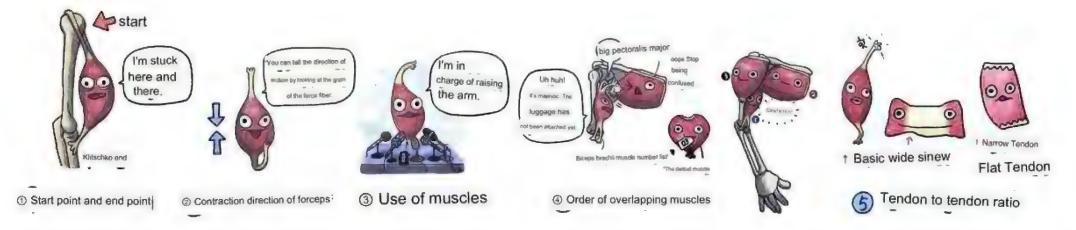




If you learned the movement of joints with a simplified skeleton in 'Chapter 1 Figure of the Human Body', in this human anatomy part, we will learn about the muscles attached to a more realistic skeleton.

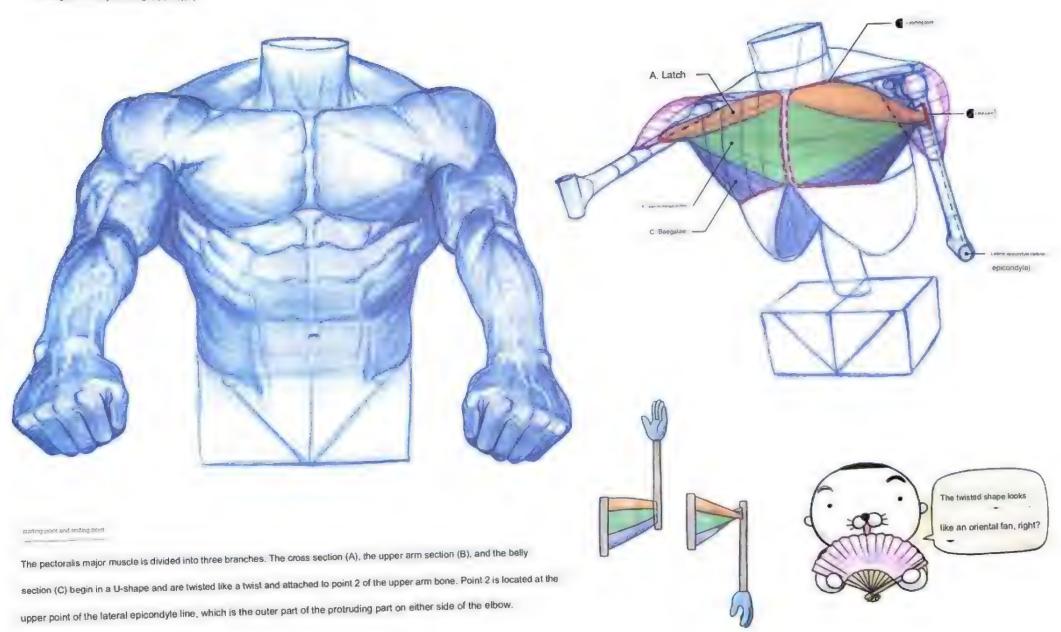
First, muscles are made up of tendons and tendons, and when force is applied to a muscle, the tendons shorten in length and increase in volume. On the other hand, tendons do

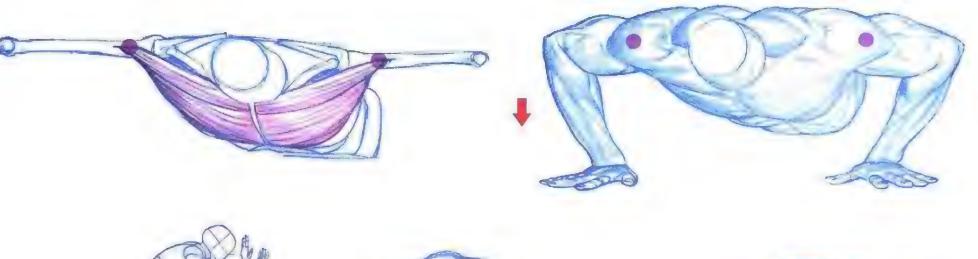
not contract and relax. Tendons are always present at the ends of tendons because they act as glue that attaches tendons to bones. These tendons vary in length and area depending on the muscle.



1 Location and use of trunk muscles

■ Pushing pectoralis major muscle (pectorul muscle)

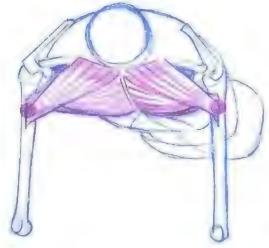






The pectoralis major muscle is used when pushing the arm
forward and when hugging something. A simple exercise that develops
the pectoralis major muscle is push-ups. The pectoralis major
muscle, which is divided into three branches, is used centering
on the cross branch when pushing the arm upward, the garter branch when
pushing the arm forward, and the belly branch when pushing the arm downward.

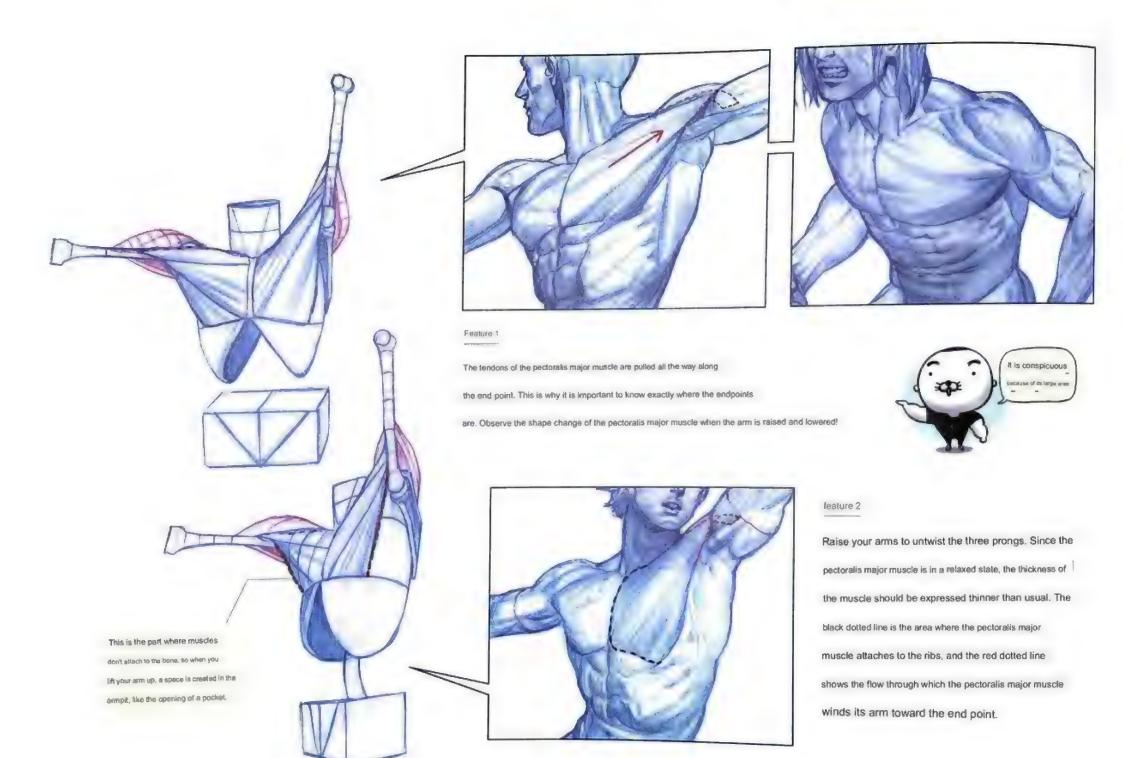
use

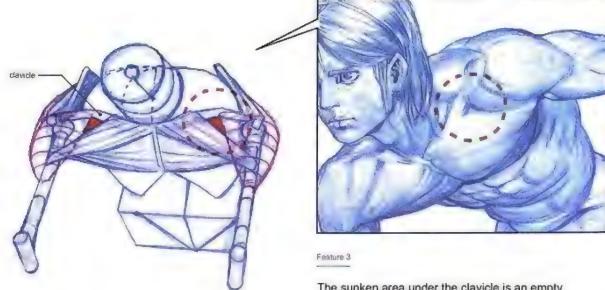








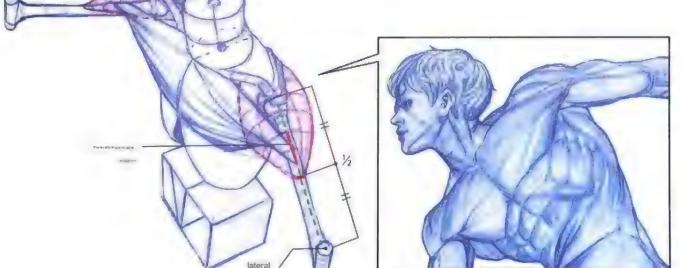




The sunken area under the clavicle is an empty space. The more the muscle develops, the clearer the concave appearance becomes.

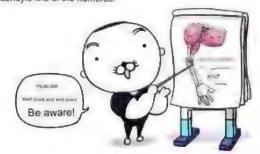
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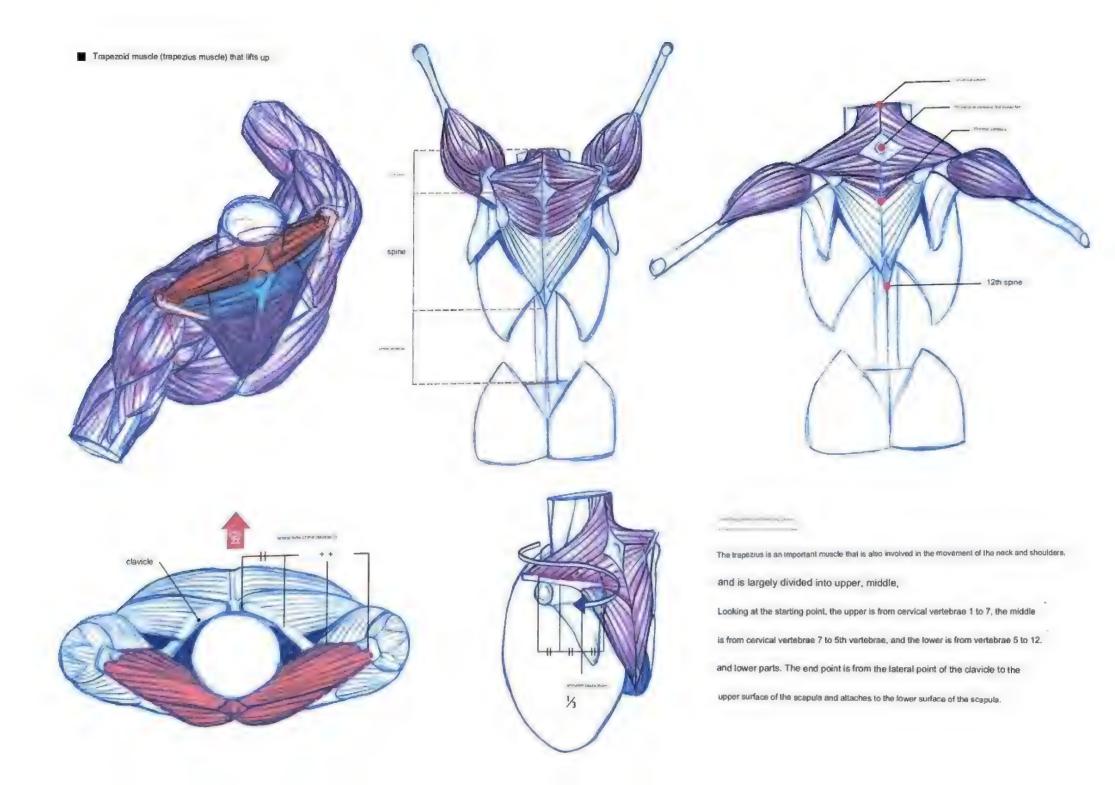
Because the pectoralis major muscle is attached to the lower surface of the collarbone (clavicle), the shape below the collarbone is not revealed when the muscle is developed.

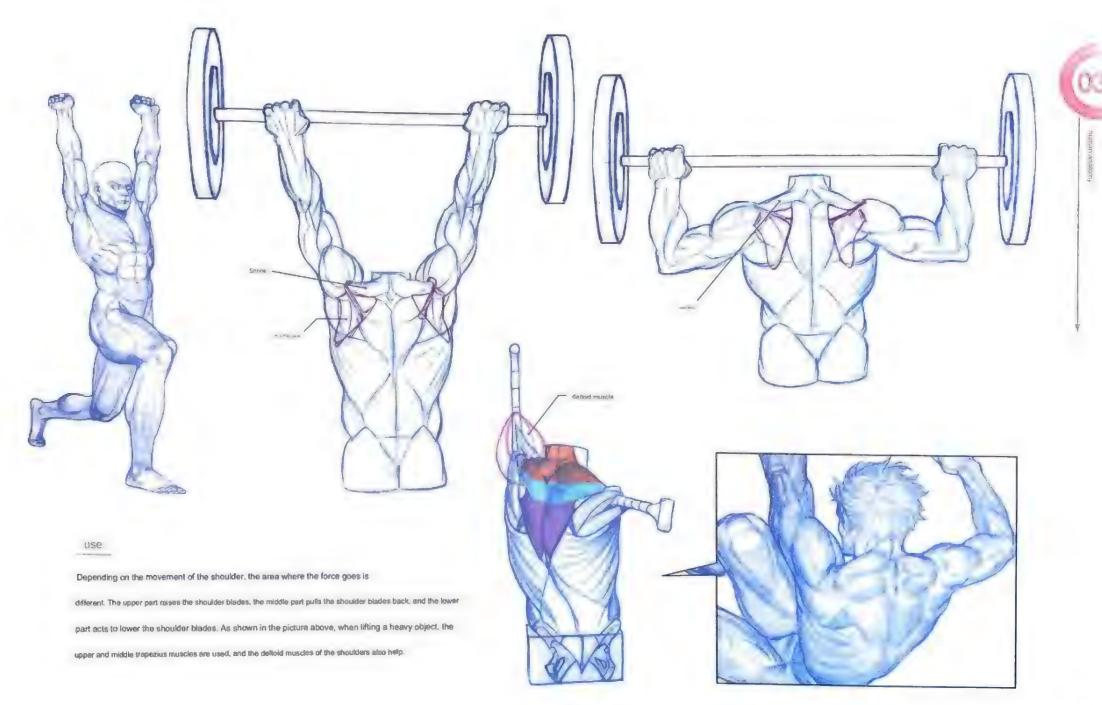


overlapping order

The deltoid muscle (deltoid muscle) covers the end point of the pectoralis major muscle. The deltoid attaches to the point of the lateral epicondyle line of the humerus.

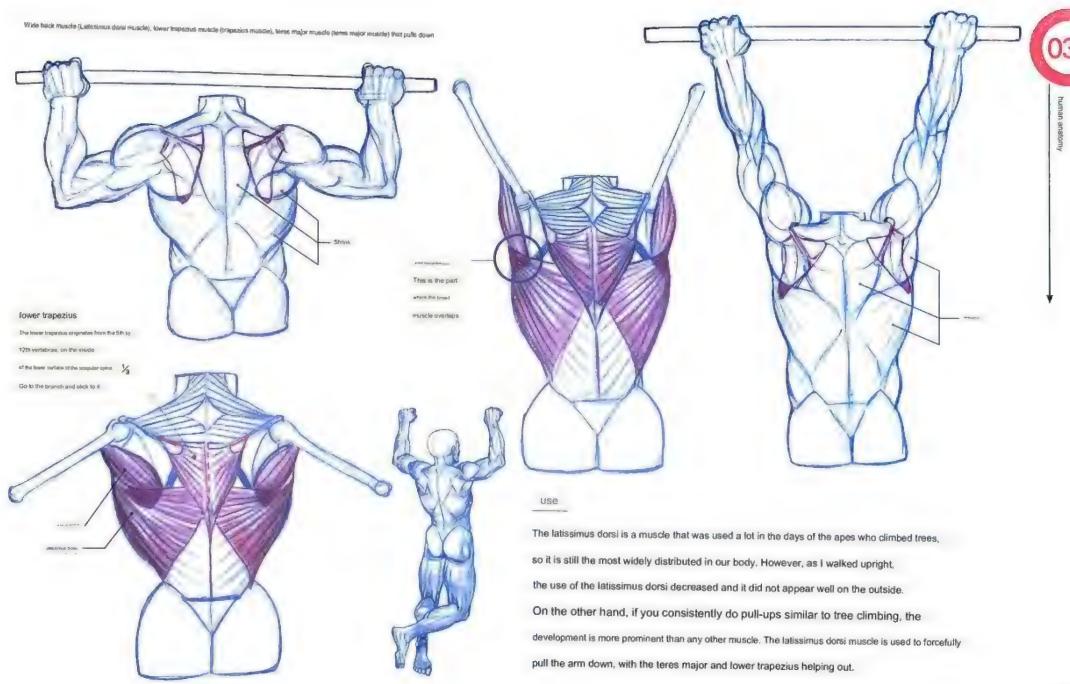


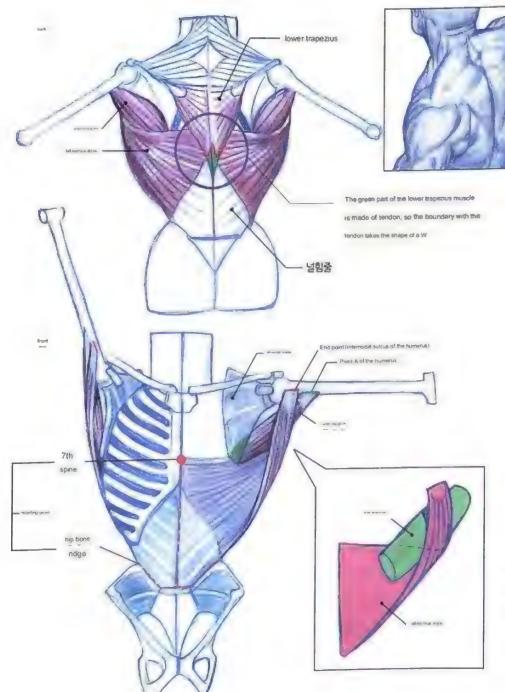




Please remember that the empty space A between the upper trapezius muscle and the neck is the part that stands out on the outside.

Points B and C are the tendon areas of the trapezius muscle, and the concave shape is evident when the muscle is contracted,



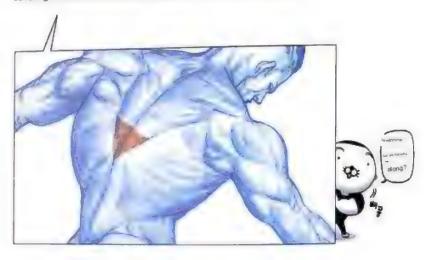


The tendon area that spreads widely in the broad round is called the 'null tendon'.

The area of this tendon is considerably larger than the tendon area of other muscles. Knowing the boundaries between tendon fibers and tendon areas, you can accurately express when muscles relax and contract.

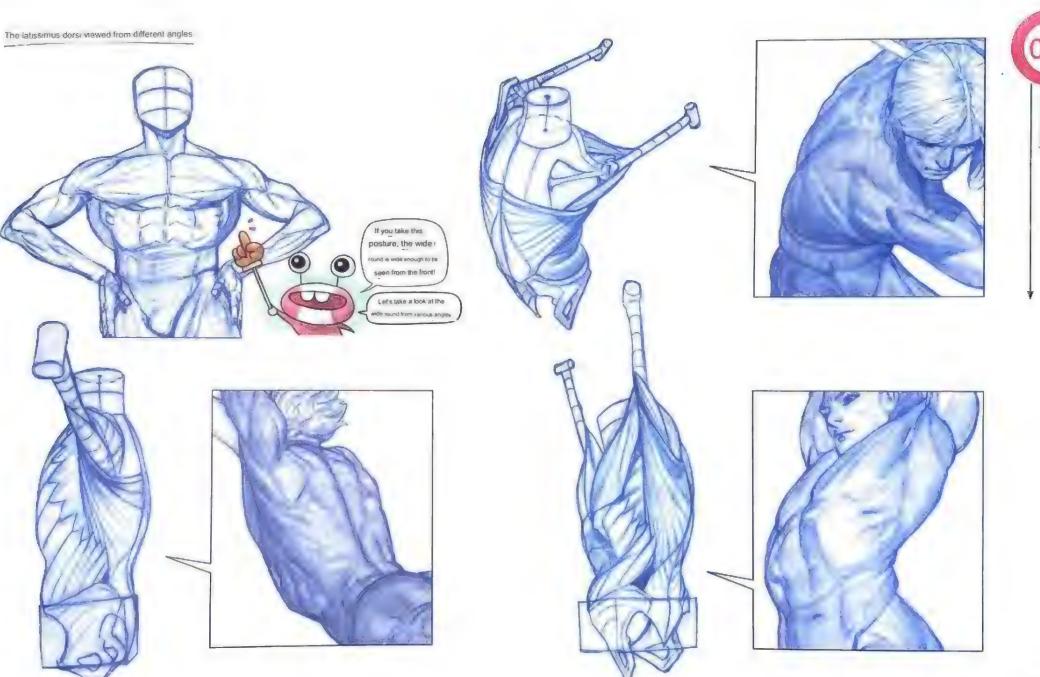
overlapping order

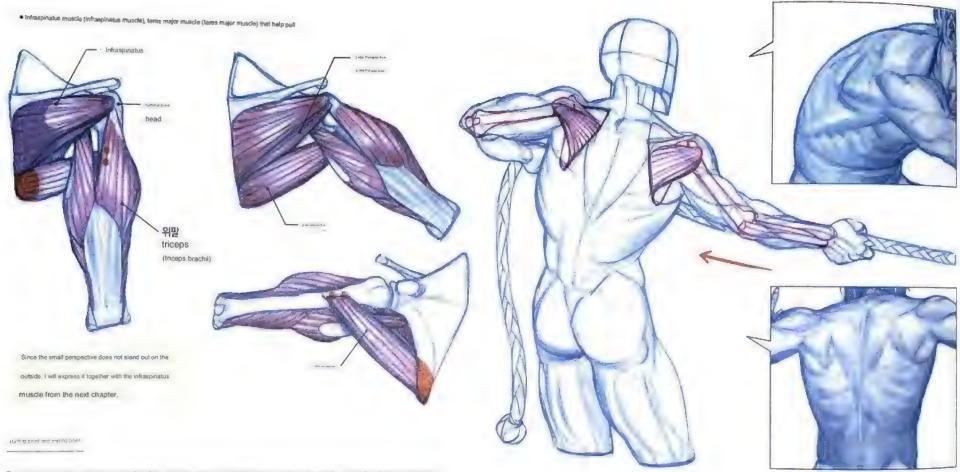
The latissimus dorsi and trapezius overlap vertebrae 7 through 12, with the trapezius covering the latissimus dorsi by the shaded area in the figure below.



en and the second

The broad roundus starts at the iliac crest along the spine from the 7th thoracic vertebra and ends at the internodal sulcus of the humerus. The starting point is wide, but towards the end point, the muscle becomes thinner. The teres major attaches from below the shoulder blade to point A on the upper arm bone. The wide round is overlapped in the form of enclosing the great circumference, I will study the great perspective in more detail tater.





The purple area is the starting point where the infraspinatus attaches to the shoulder blade and the end point where it touches the humerus head,

and the red area is the start point where the teres major muscle attaches below the shoulder blade and the end point where the humanus touches the front of the arm

use

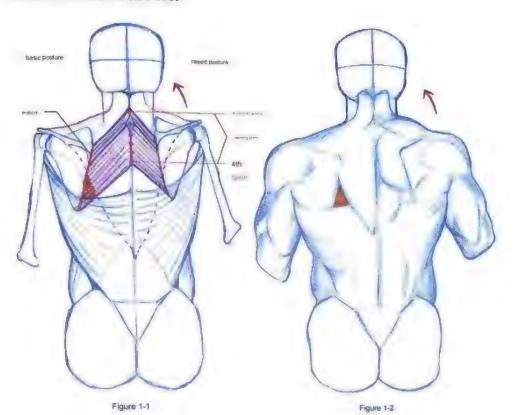
The infraspinatus and teres major muscles pull the arm back to pull something.

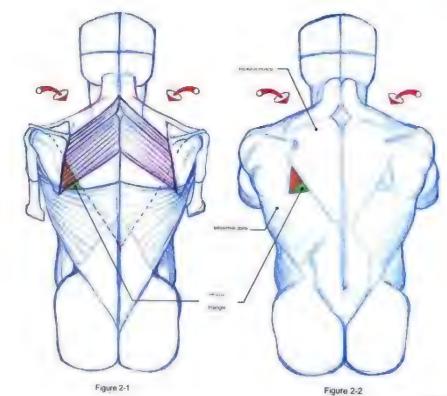
overlapping order

The deltoid muscle covers most of the area where the infraspinatus and teres major muscles are intertwined, so the complex structure is not clearly visible. However, it is a part that must be studied in order to understand the working principle of movement. This part gets more complicated the more the movement is done, so I'll cover it in detail later.



■ Rhomboid muscle that lifts the shoulder





Keep a good eye on the number of vertiebrae to which the back muscles are disched

The rhombus is shown in Figure 1-1.

Starts at the 6th cervical vertebra

On the souds of the shoulder blade

Byough the 4th thorson vertebrer

It hits the corner.

use

The rhomboid muscle acts to elevate and pull the shoulder toward the back. You can observe the appearance of the rhombus muscle when it contracts through Figure 1-2. When the shoulders are pushed forward as far as possible, the rhomboid muscle is in the most relaxed position, and untike when contracted, it does not affect the appearance, as shown in Figures 2-1 and 2-2.

overlapping order

The rhombus muscles are formed by the trapezius and the latins/mus done

Mostly obscured (except for the auscultatory triangle).

fory triangle).

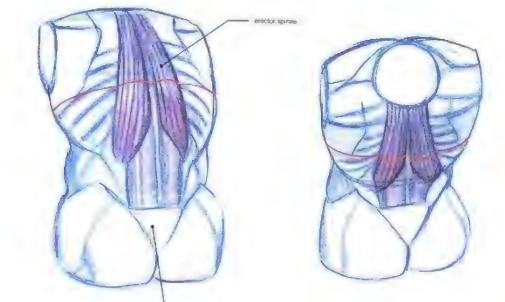


The auscultation triangle is the part where the stethoscope is placed, hence the name

'Auscultation Triangle'. As shown in Figures 2-1 and 2-2, this is the area

that widens when the shoulder is pushed forward.

■ The eractor spinor muscle that supports the lower back (eractor spinor bifide)



starting point and entire points

The spinous muscle, the longest muscle, and the iliac costal muscle are collectively called the erector spinae. The picture on the left is a simplified version of these muscles combined into a single mass. Please note that it is expressed differently from the actual muscle shape for better understanding. The erector spinae muscle runs along the spine from the base of the skull to the sacrum.

use

It is used when bending back at the waist and supporting posture,



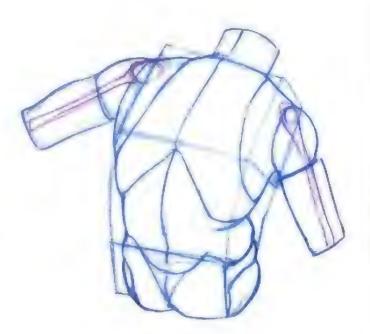
overlapping order

It is located in the deepest layer of the back muscles and is directly connected to the bone.

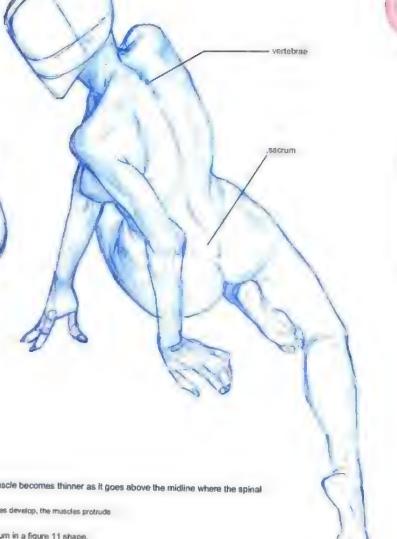


- Sacrum area











process is located. Also, as the erector spinse muscles develop, the muscles protrude

from the center line of the back toward the sacrum in a figure 11 shape.

When you lean forward at the waist, the erector spinae muscles relax, so the thickness of the muscle

becomes thinner, making the spinal protrusion stand out.

· Senatus anterior muscle (serrutus anterior muscle) pushes the shoulder forward

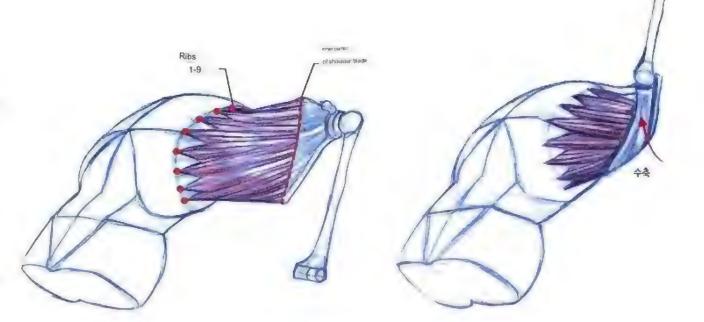
starting point and an holy paint

The serratus anterior muscle attaches to the 1st through 9th ribs and attaches to the inner corner of the shoulder blade. It's like covering your chest with your hands It looks like it.

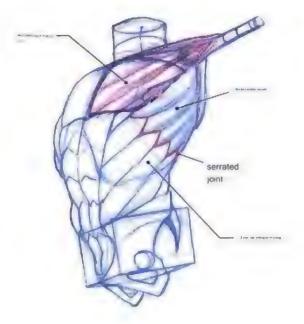
overlapping order

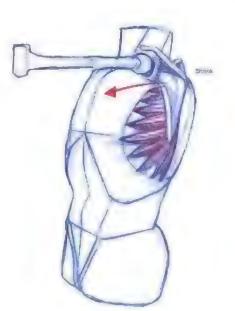
While the pectorals major covers the storracts, it extends to the 4th and 5th branches of the servature anterior muscle.

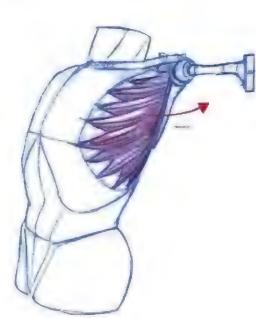
cover The serrated joint that engages the external oblique muscle is prominent outwardly when the arm is raised.

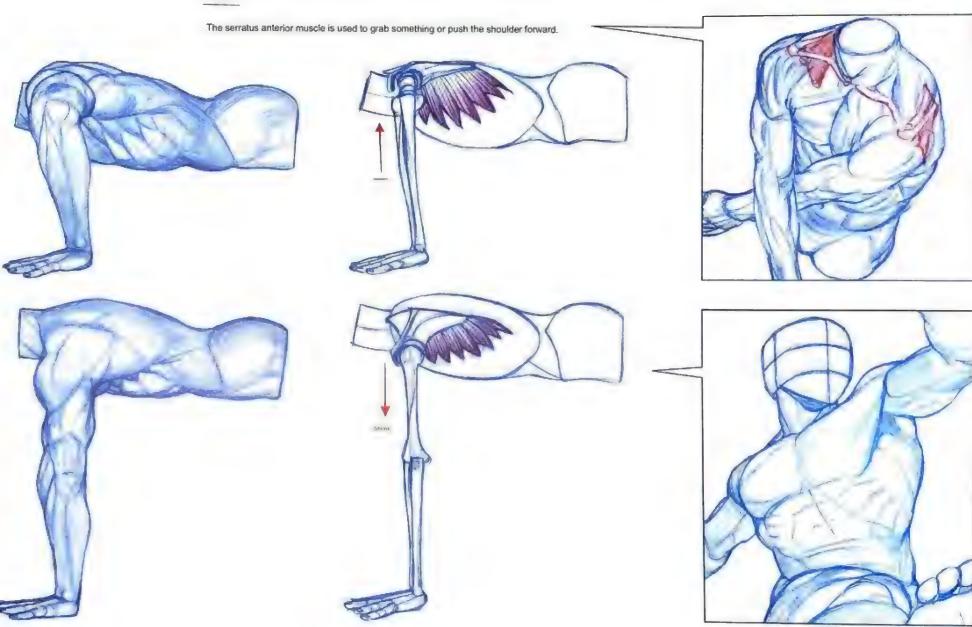




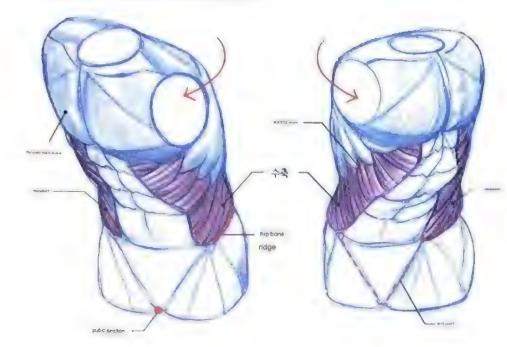








External oblique muscle that twists the waist (external oblique muscle)



The external oblique muscle has 8 branches that start from the 5th to 12th ribs and extend along the iliac crest to the pubic junction.

use

This part is used when bending the upper body sideways or twisting the torso. In the chest, the ribs protect the organs, but in the abdomen, there are only the spine for the movement of the waist, but there are no ribs, so it is vulnerable to external shocks.

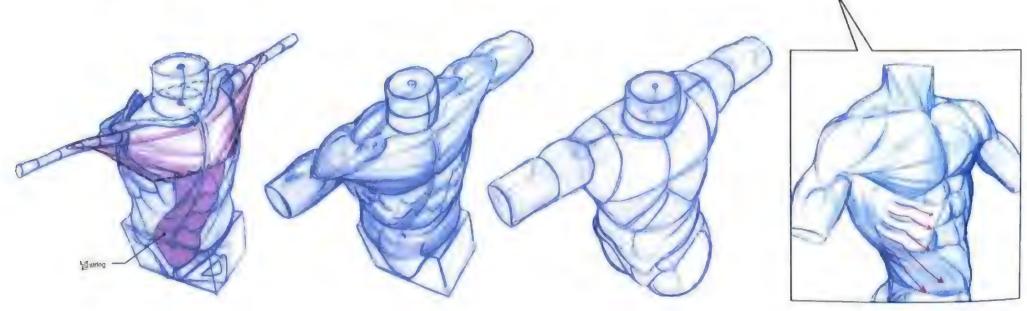
So instead of bones, a large area of tendon called 'strength' plays a role in protecting the internal organs of the abdomen.

overlapping order

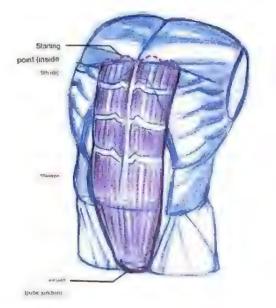
The tendon of the external oblique muscle covers the rectus abdominis (rectus abdominis) muscle shown on the right page.

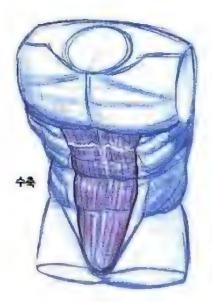
복장

The slope of the muscle fibers of the serratus anterior muscle and the external oblique abdominis becomes steeper as they go down.



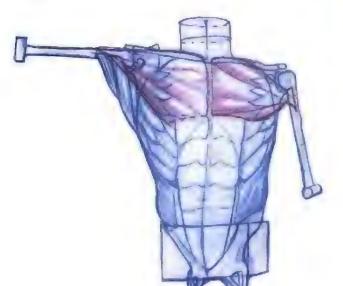


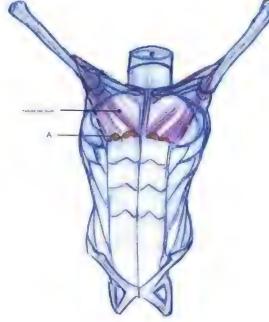












starting point and analog point

It attaches to the inside of the 5th rib and extends to the pubic symphysis.

use

When the torso is bent forward, the rectus abdominis muscle contracts.

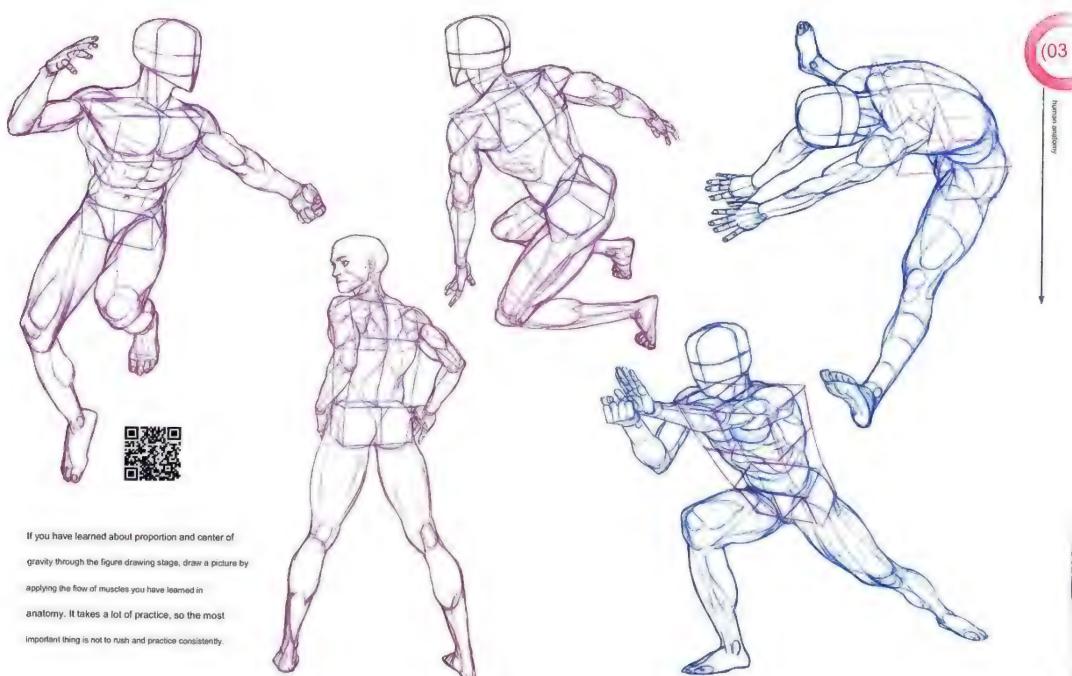
The rectus abdominis muscle relaxes when the torso leans back,

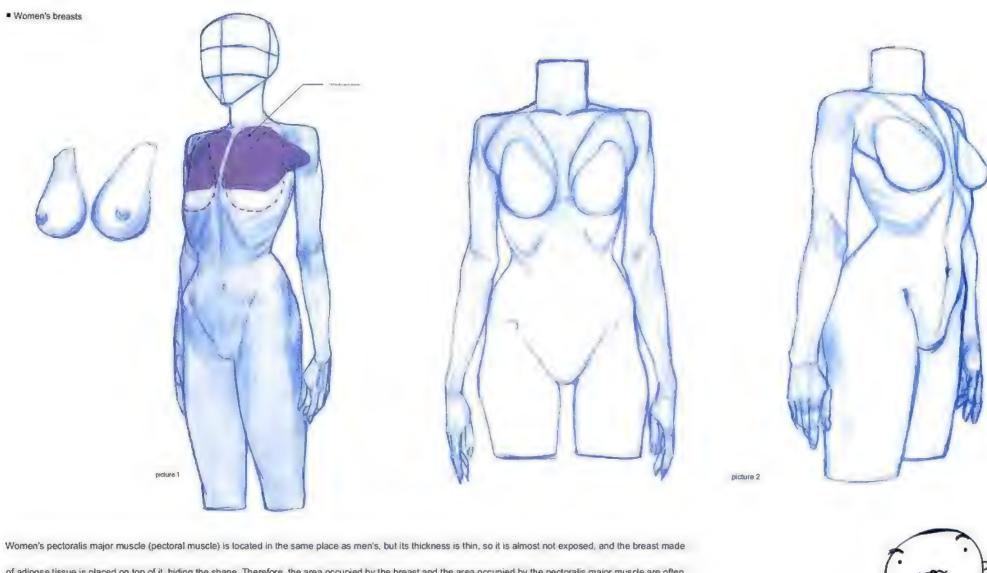
overlapping order

The pactoralis major muscle slightly covers A, near the origin of the rectus abdominis, and the

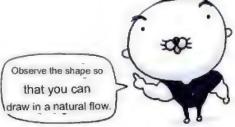
abdominis tendon of the external oblique muscle covers the top of the rectus abdominis.

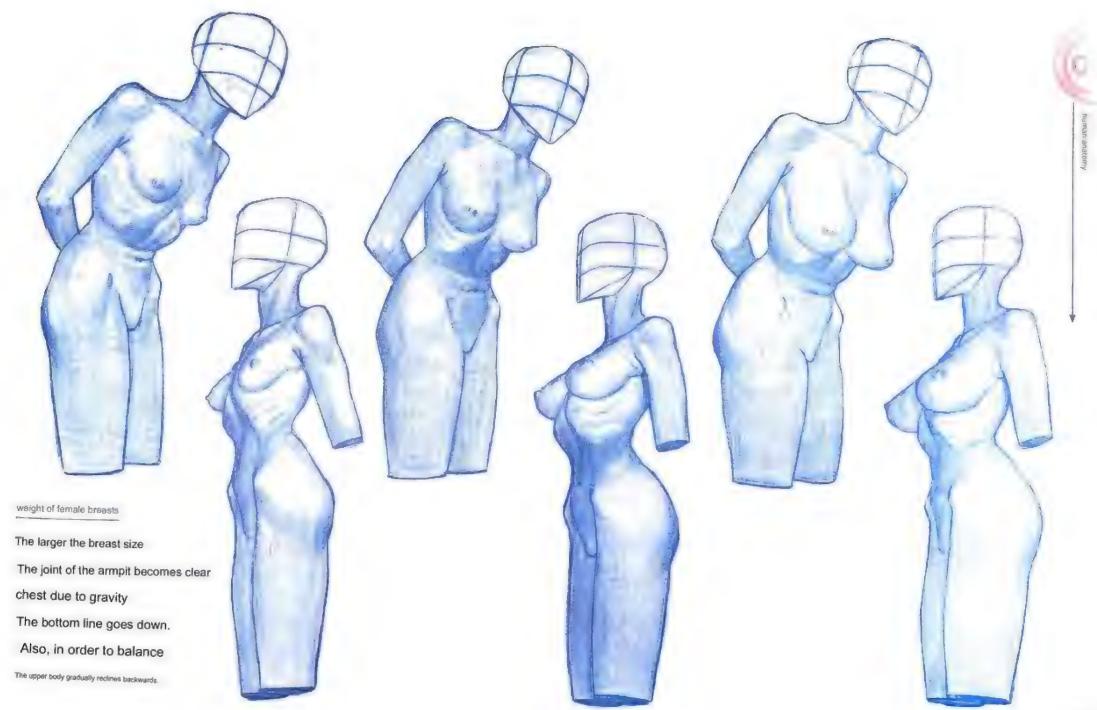
■ The flow of a man's torso covered with skin /Look at how information from anatomy manifests itself in physical appearance.



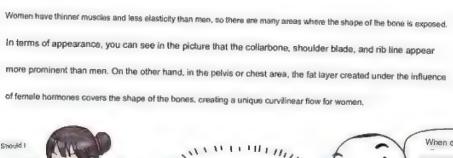


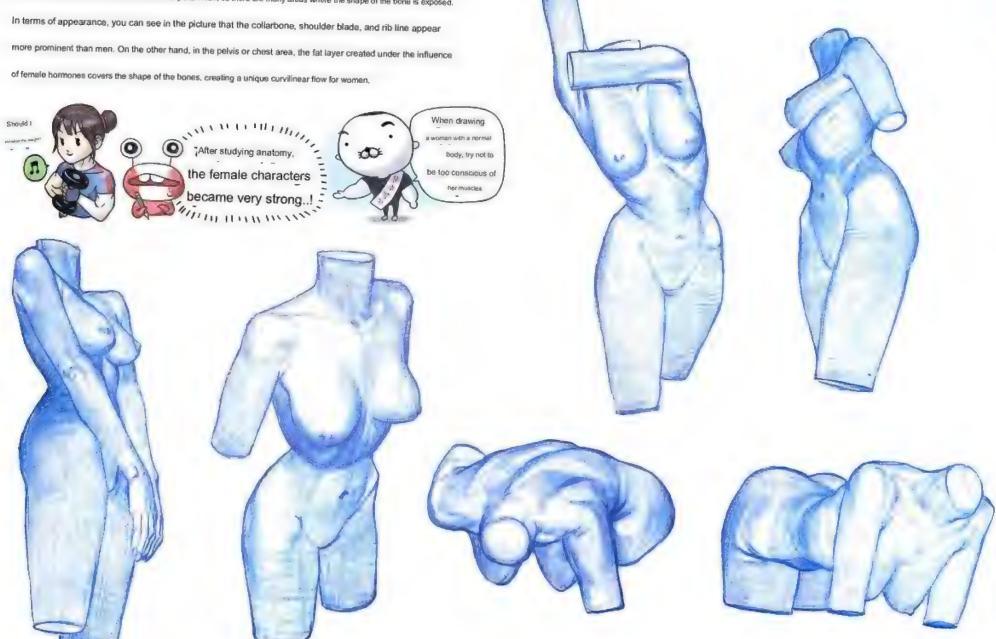
Women's pectoralis major muscle (pectoral muscle) is located in the same place as men's, but its thickness is thin, so it is almost not exposed, and the breast made of adipose tissue is placed on top of it, hiding the shape. Therefore, the area occupied by the breast and the area occupied by the pectoralis major muscle are often viewed as the same. In reality, as shown in Figure 1, the breast area extends further down the pectoralis major muscle. Breasts are pulled or pressed according to certain postures or movements, and their shape changes as they lean toward the direction of movement. Note that the breast is fixed as shown in the red dotted line in Figure 1. As shown in Figure 2, if you look at the shape side, you can divide the chest area into two and catch the flow.





female torso flow with skin covered





2 Location and use of arm muscles

■ Overall flow and names of arms

name and location of arm muscles

Shall we find out?

Anatomical Appearance and Reality

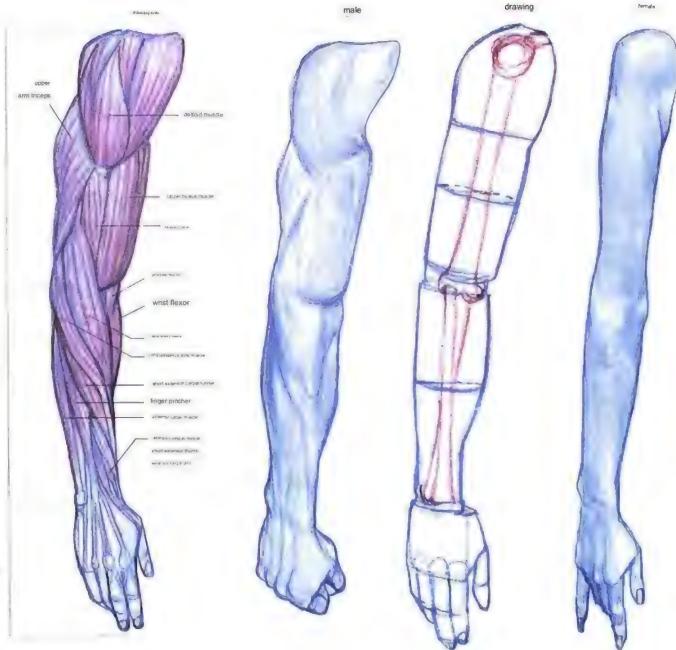
Compare appearances

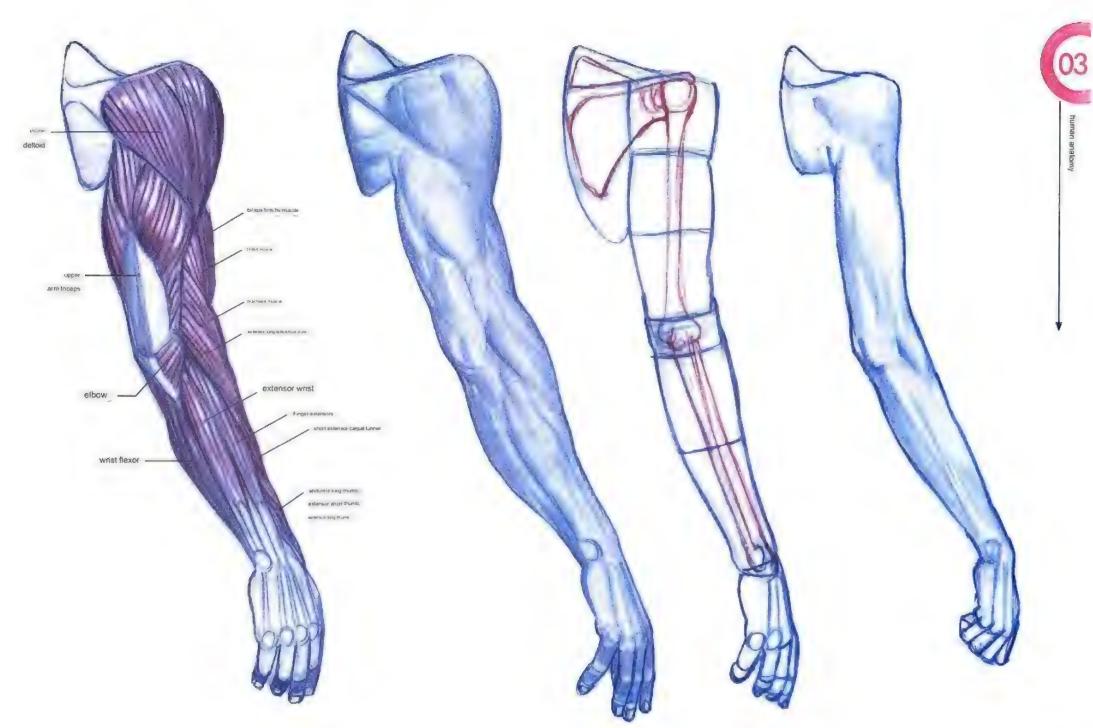
Observe!



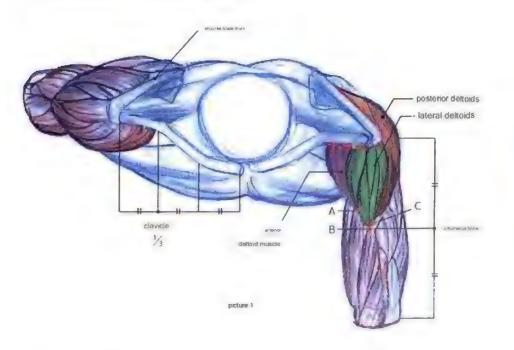








■ The deltoid muscle that raises the arm (deltoid muscle)





Notice that the anterior and posterior deltoids are shorter than the lateral deltoids.



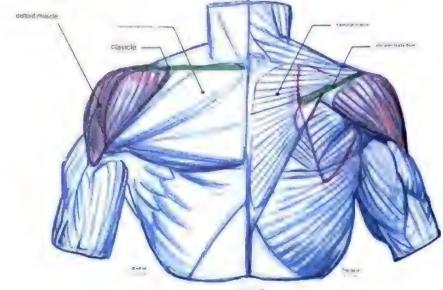
congration this principant

The deltoid starts at the familial point of the clavicle and the lateral point of the scapula and ends at position B on the humerus. The deltoid muscle is largely divided into three branches: anterior, lateral, and posterior. The anterior deltoid muscle does not reach the end point B, but merges with the lateral deltoid muscle as if it disappears at point A. C, the endpoint of the posterior deltoid muscle, is almost identical to the location of B, the endpoint of the lateral deltoid muscle.

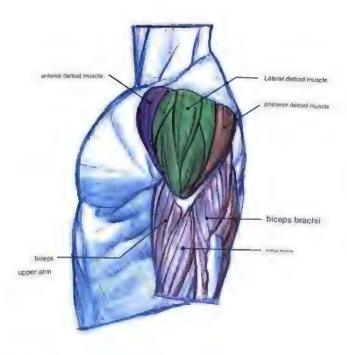
Inclination of the collarbone and scaputar spine

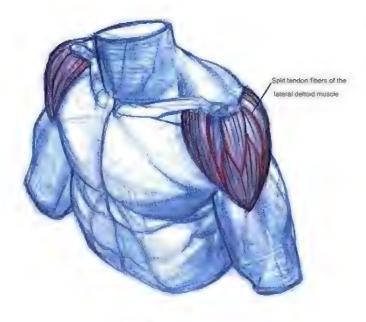
As shown in Figure 2, comparing the position and appearance of the muscle back and forth shows the structure and connection of the muscle in three dimensions.

It helps you understand. When viewed from the front, the deltoid is connected to the clavicle, so the upper surface is horizontal, and from the back, the scapula bends down obliquely along the slope of the scapula.



picture 2







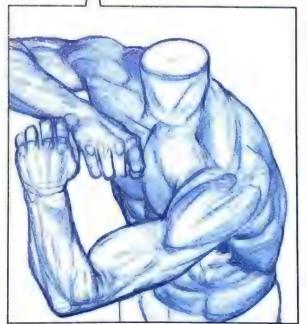
use

The deltoid muscle is responsible for lifting the arm around the shoulder. The anterior deltoid lifts the arm forward, the lateral deltoid lifts the arm sideways, and the posterior deltoid lifts the arm backward.

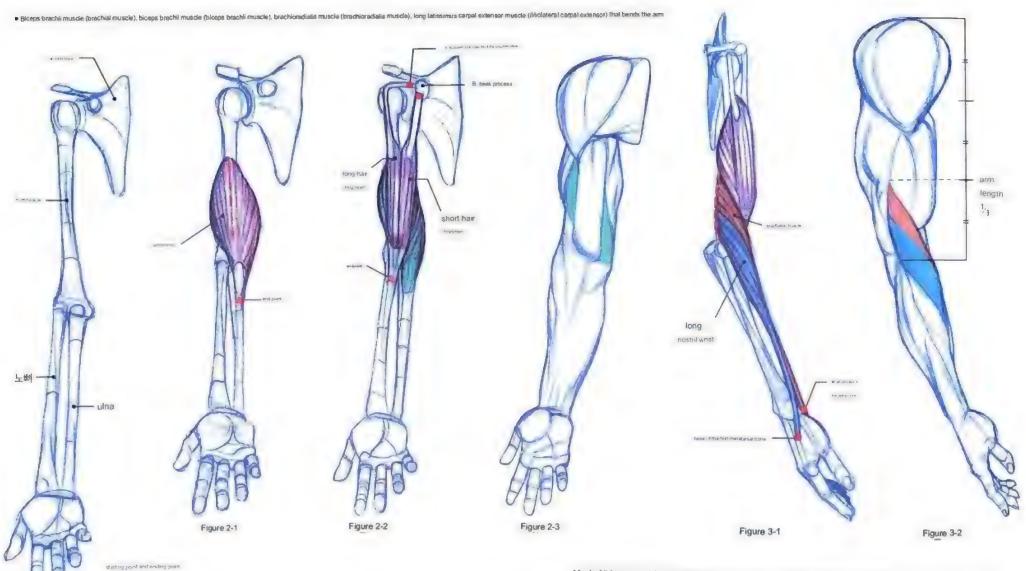
Overlapping order

The deltoids include the pectoralis major, biceps brachii, triceps brachii, It is located at the top of the infraspinatus, teres minor, and teres major muscles.

The lateral deltoid muscles have split muscle fibers like meshed crocodile teeth, which produce strong force even though the length of contraction is shorter than that of general muscles. As shown in the picture on the far right, when the arm is raised, the deltoid muscle is a structure that goes over the back.



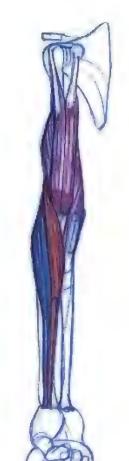




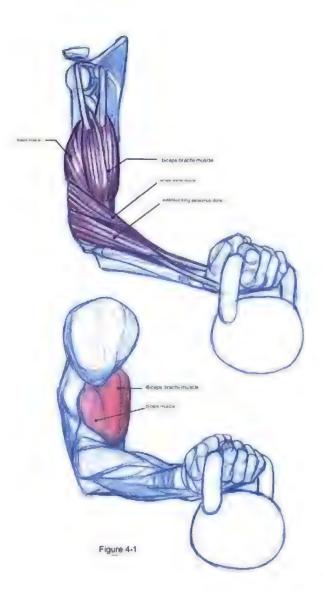
The brachial muscle begins at the dotted fine on the side of the humerus in Figure 2-1 and ends at the endpoint marked on the ulna. As shown in Figure 2-2, the biceps brachii muscle is divided into long and short prongs. The long prong starts from the joint supra-arbicular tirbercle (A) of the scapula, and the short prong starts from two points, the beak process (B), and ends at a point on the radius bone. Connected. The biceps brachii muscle covers the lop of the brachialis muscle and controls the brachialis muscle.

picture 1

Most of it is covered. The brachialis muscle is wider than the biceps brachii muscle, so it sticks out on both sides as shown in Figure 2-2. Let's check the final position through Figure 2-3 to see how it looks in real life. The brachioradialis muscle and extensor carpl longus longus muscle in Figure 3-1 start at about the length of the upper arm. The brachialis muscle goes to the brush process of the radius bone and attaches, and the long radius carpal extensor muscle ends at the base of the first metatarsal bone.







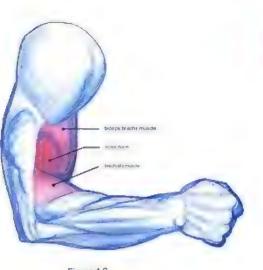
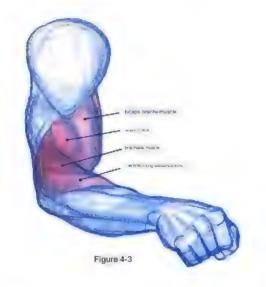


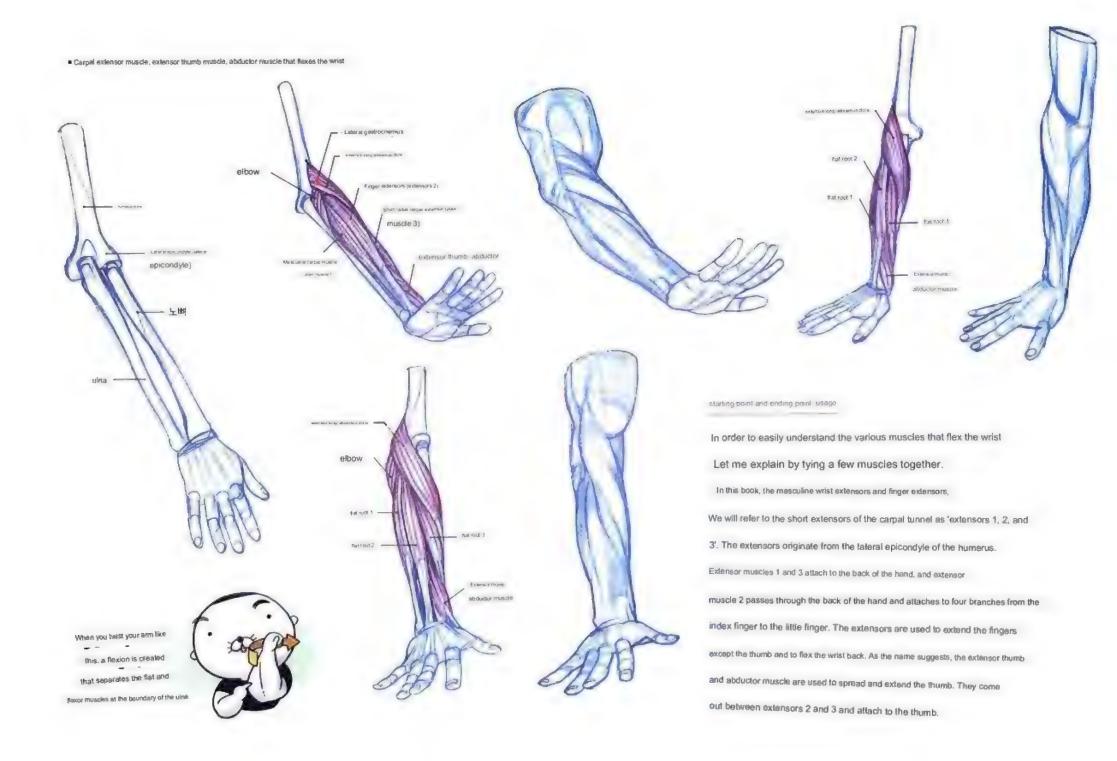
Figure 4-2

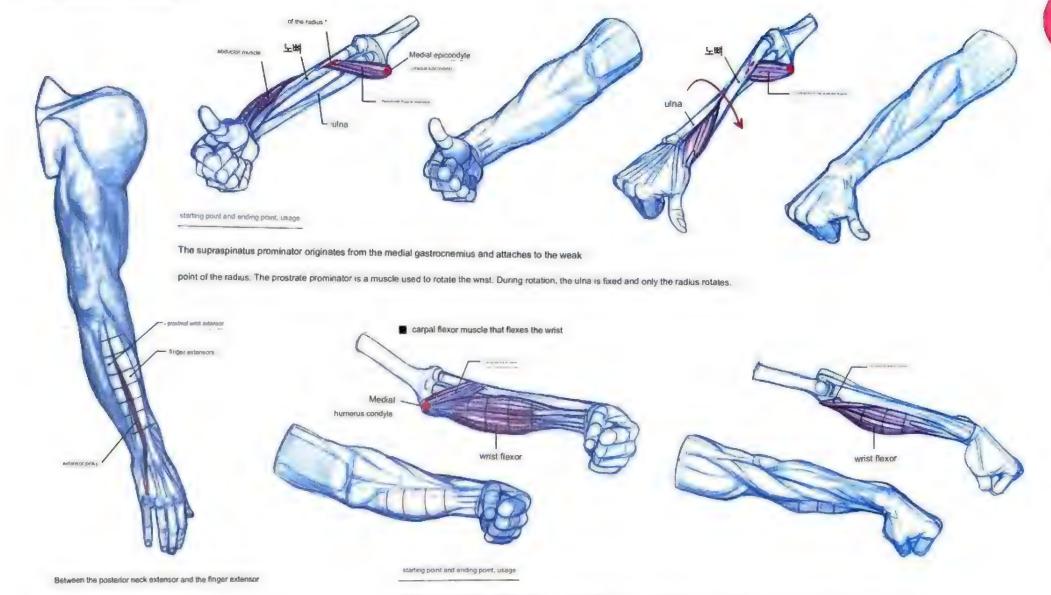


use

When you bend your arm with your palm facing the sky, as shown in Figure 4-1, you engage the brachil and biceps brachil muscles. As shown in Figure 4-2, when the arm is bent with the thumb pointing up, three muscles are used: the brachil muscle, the biceps brachil muscle, and the biceps brachil muscle. As shown in Figure 4-3, the back of the hand faces the sky.

When the arm is bent in this state, all four muscles are used: the brachii muscle, the biceps brachii muscle, the brachii longus muscle, and the long latissimus carpal extensor muscle. The rad area in the picture is the muscle that is mainly used as the color is darker. Because the muscles are shifted depending on the direction of the hand, the silhouette of the arm and the muscles that are mainly used are also different.

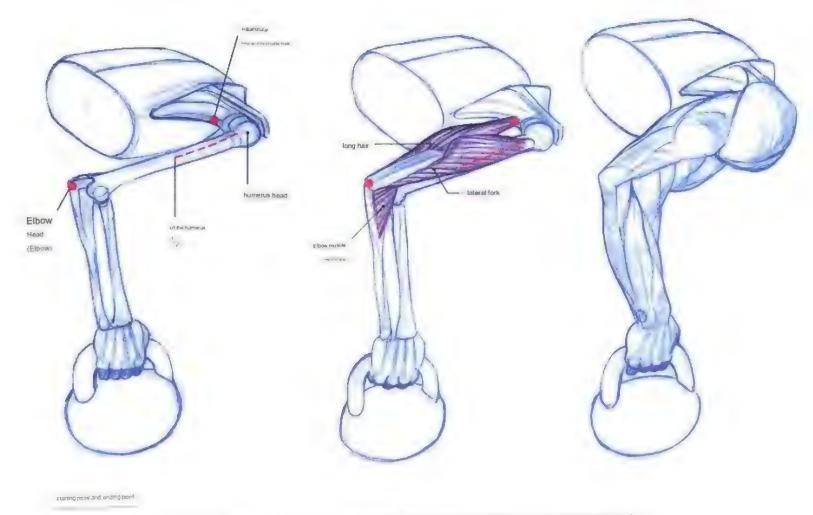




The extensor pinkie muscle is present and will not be discussed in this book because this muscle is small and barely visible.

The muscles that bend the hand are classified into six, and in this book, we will group them into one and call them 'carpal flexors'. It's because it's tied to one flow in appearance. The carpal flexors originate on the medial epicondyle of the humerus, pass through the wrist and spread to each finger, and serve to flex the fingers and wrist.

triceps brachii (triceps brachii)

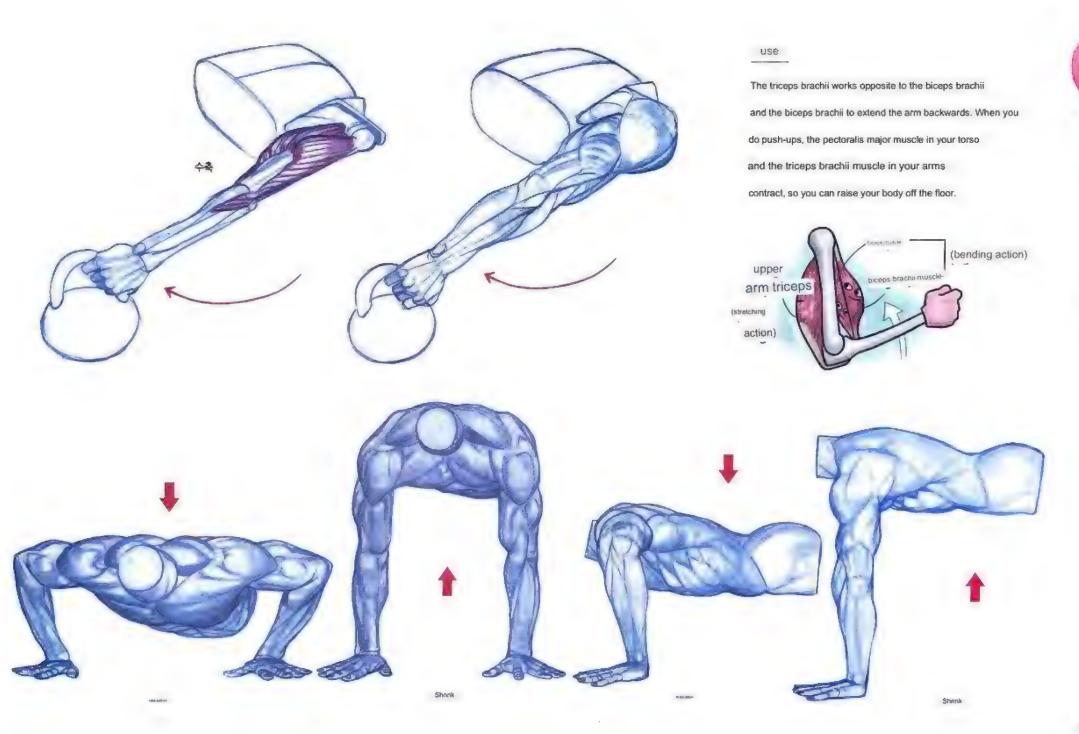


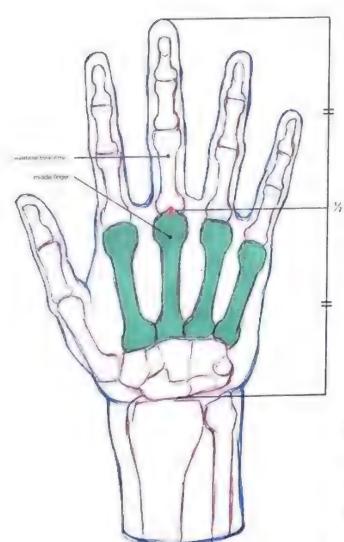
As the name implies, the brachial triceps muscle consists of the inner branch, the family branch, and the long branch. Long forked shoulder blade In the subarticular tubercle, the family branch starts from the lower part of the humerus head to the weak point of the humerus and attaches to the elbow head. The inner prongs are hidden by the long prongs and are difficult to see in the family, so I will omit them. In the final look of the arm, most of the origin of the triceps will be covered by the deltoid.



Characteristics of the brachial triceps

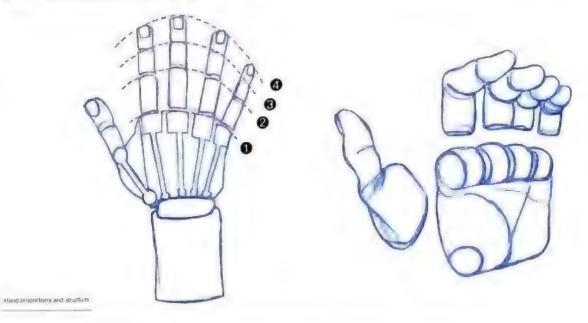
Unlike other muscles, the brachial triceps has a wide tendon area. As the muscle develops, the flat tendon area and the sinew are contrasted, and the boundary is clearly divided.





The evolution and shape of the hand

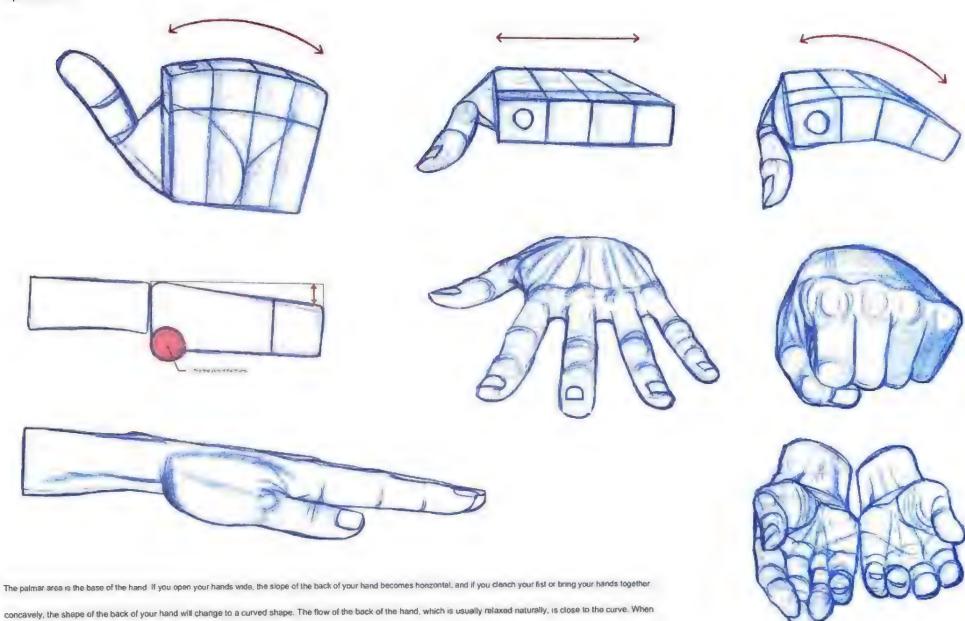
What part of your body do you see the most? Most people think of a face, but the correct answer is a hand. So, when many artists create and draw the human body, the part they draw that resembles their own body the most is the hand. Unlike other animals, humans have freed their hands through bipedalism, and they have been able to grab objects and make tools with them for hunting. In order for humans with weak physical abilities to hunt animals, they needed a weapon that could attack from a long distance. Therefore, by developing weapons such as spears, they were able to hunt animals that were much stronger than themselves, and based on this hunting technology, mankind was able to survive to this day. The function of the thumb had to be developed in order to make precise tools and throw them in precise locations. So, compared to other apes, humans evolved to have a longer thumb ratio and shorter four fingers, resulting in the present hand.



In this chapter, I will explain the hand in an easy-to-understand way, rather than an anatomical approach.

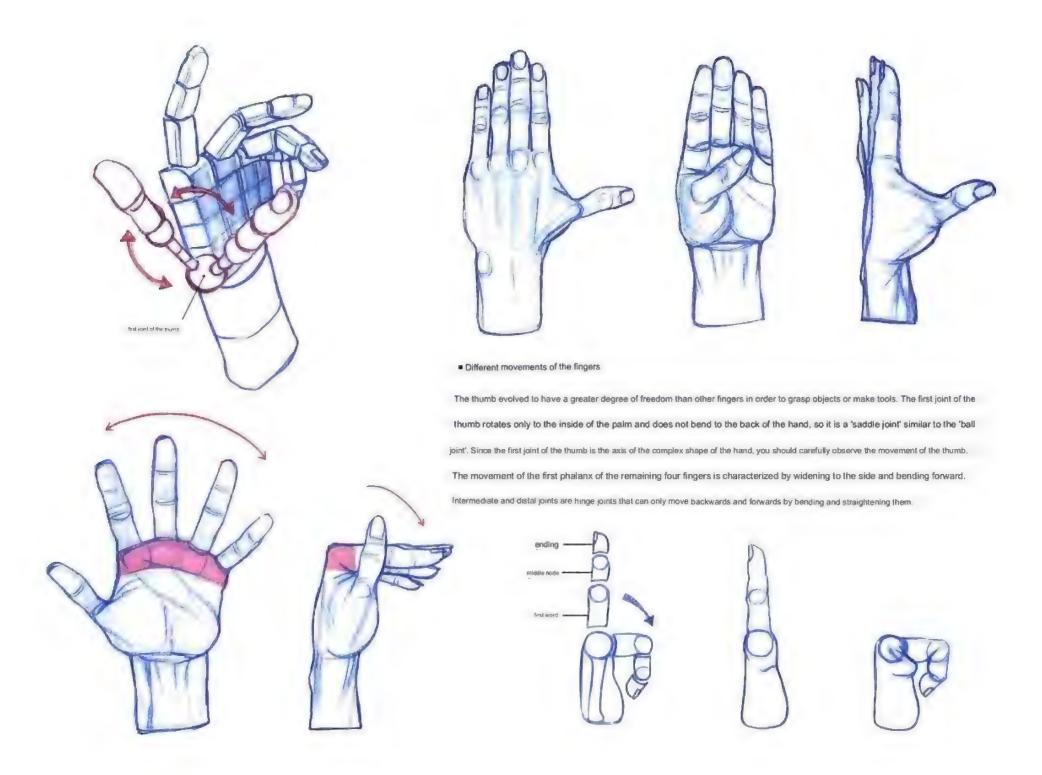
In the picture on the left, the red dot where the metatarsal bone and the first phalanx of the middle finger meet is the point along the length from the tip of the palm to the tip of the middle finger. Also, by connecting the joint points of each finger joint, a parabola is drawn around the middle finger. Line 1 in the middle picture is also curved in the same flow as the other dotted lines, so be careful not to draw it as a straight line. If you look at your hand structurally, you can think of it as the palm, thumb, and other four fingers.

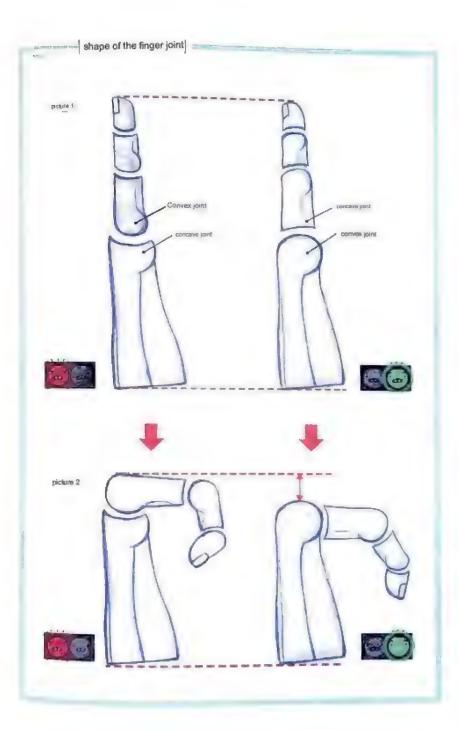
■ palm area



viawed from the side, the thickness of the back of the hand gets thinner from the wrist to the fingers. Don't forget that the first joint of the thumb is located in the direction of the palm!

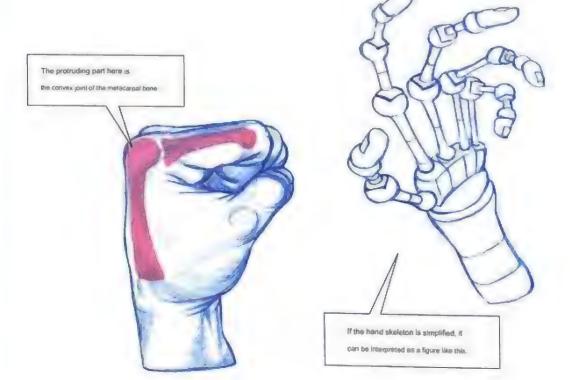
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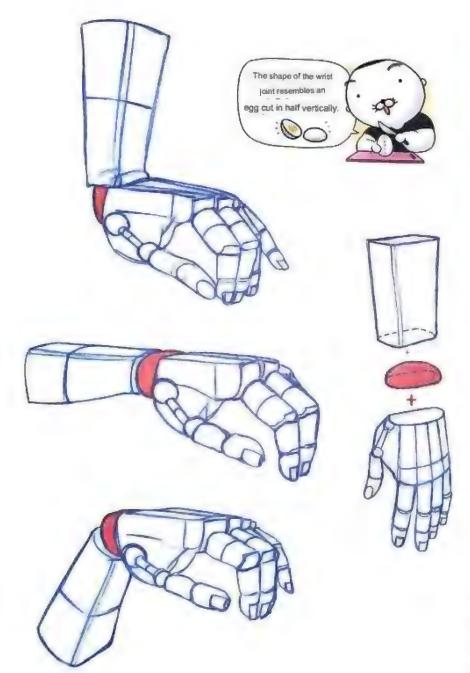
Convex and concave joints

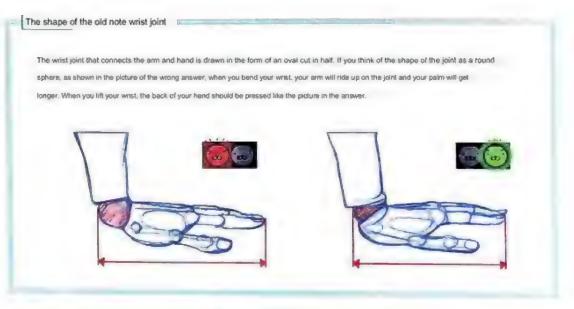
Most of the joints in the human body work by combining a convex joint on one side and a concave joint on the other side that accepts it. Looking at Figures 1 and 2, let's look at the difference in movement depending on the location of the convex and concave joints. Figure 1 shows a finger before bending with the positions of the concave and convex joints opposite to each other. At this time, you can see that the length of the hands is the same. However, bending the fingers as shown in Figure 2 caused a difference in the length of the back of the hand. The right hand in Figures 1 and 2 shows the correct joint structure. Depending on the position of the convex joint and the concave joint, the shape of the hand changes when the movement progresses, so you need to know the location of the joint well. The fingers are especially important because they have a lot of joints.

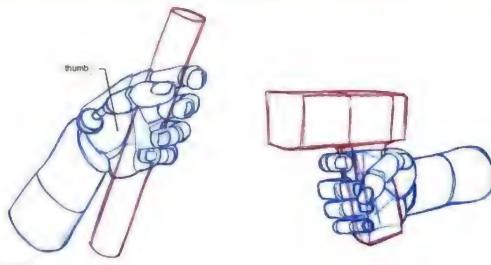


Division of hand structure Let's draw various hand gestures through the abovementioned contents and figure drawing. Should I jar timy mals? Should 17 I sometimes omit the nails because it seems to add something more to the complex shape. However,

it's good to draw the fingernails, as they give the direction of the fingers and make the hand more believable!

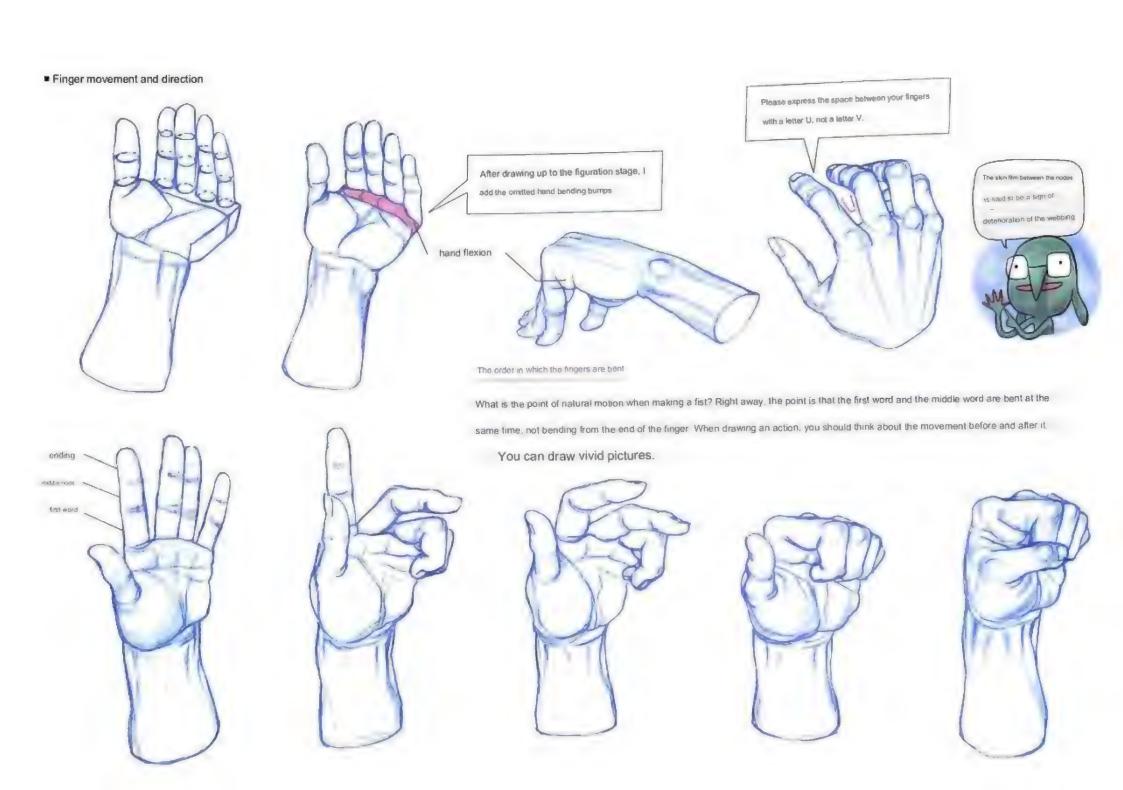




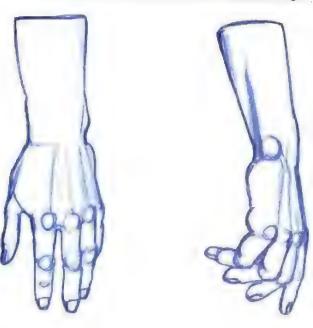


hand holding tool

We do not hold the tool perpendicular to the wrist. It will be held at an angle as shown in the picture above. If you try to hold it vertically, you won't be able to hold the object tightly because of the throkness of the thumb. Express the shape of your hand when holding something like a knife, stick, gun, etc. obliquely like this.

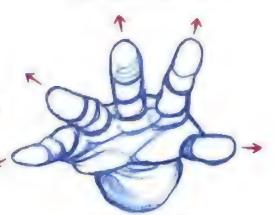


The index finger is straightened and gradually bends toward the little finger.



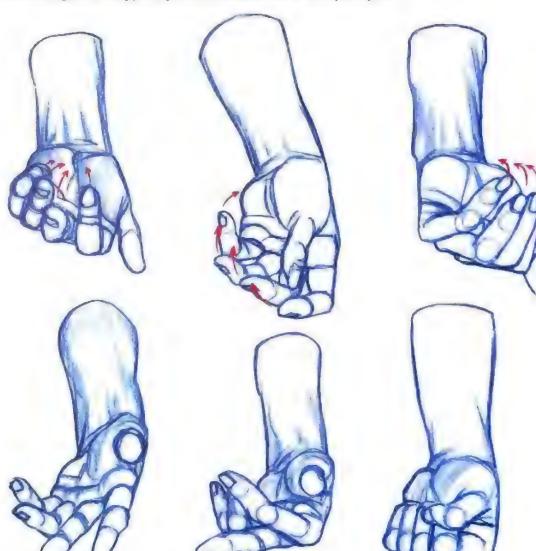
finger posture

When you spread your fingers apart, your fingertips extend radially.



fingers folded posture

When you close your hands, each finger will come together toward the center of your palm. Because all the fingers come together toward the center, when you make a fist, your fingers interlock and there is no gap. Each finger bends at a different angle, so bending your fingers is more difficult to draw than straightening them.



4 arm flow

1'Pretzel Flow and Knot Flow biceps brachii deltoid muscle

Major flow of the outer arm

When looking at the arm from the outside, the deltoid, brachii, and brachii muscle have the shape of a rope twisted like a twist. If you add the remaining muscles around this flow, you can easily express the flow of the arm.

Many people find it difficult to draw where the joints fold. In the case of the arm, it

is easy to understand if you think of the shape of the biceps brachii muscle digging between the prostrate

pronator muscle and the brachloradialis muscle like a rope knot.

main flow of the inner arm

3-stage separation of arms deltoid muscle

In the figure, the point where the pin is inserted in the joint, which is the axis of movement.

Rather, it is a point connecting the parts divided by area.

The flow of the arm is largely retaind to the defold muscle and

It can be divided into upper arm and lower arm.

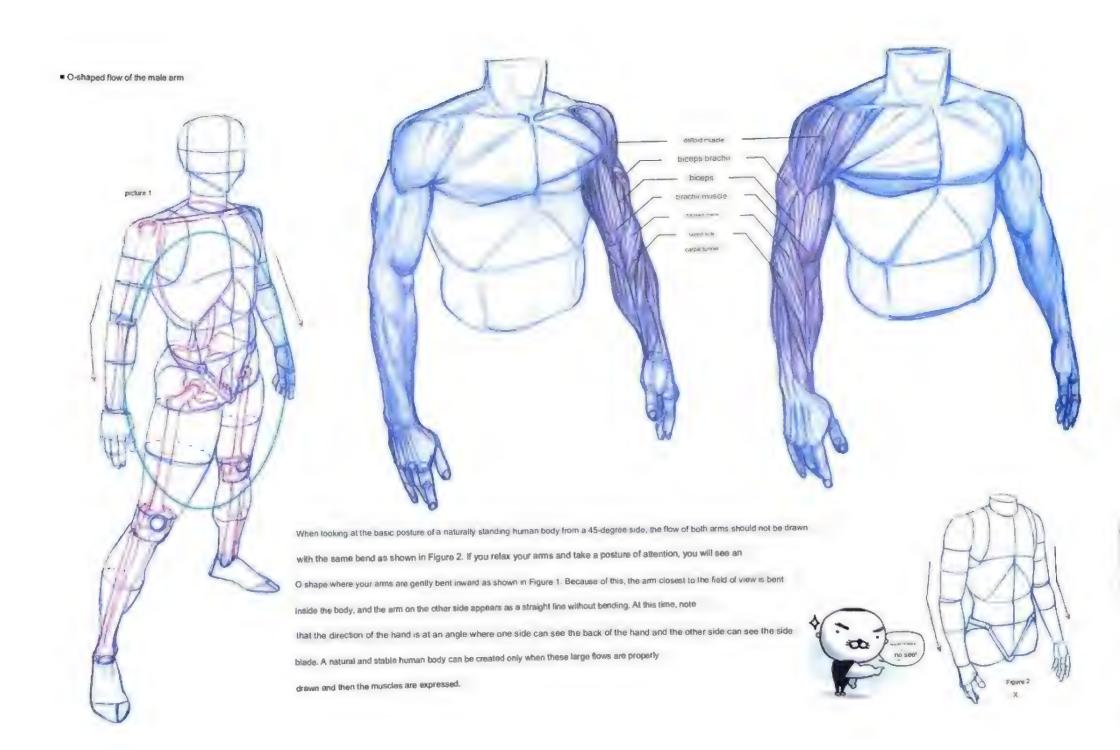
Due to the detailed description of the muscles

Make sure you don't break this big chunk.

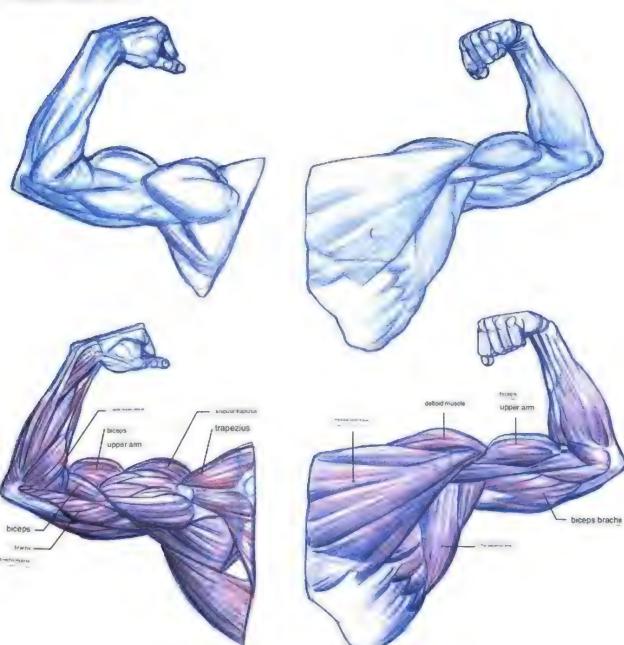
It is important to connect muscles, not divide them.

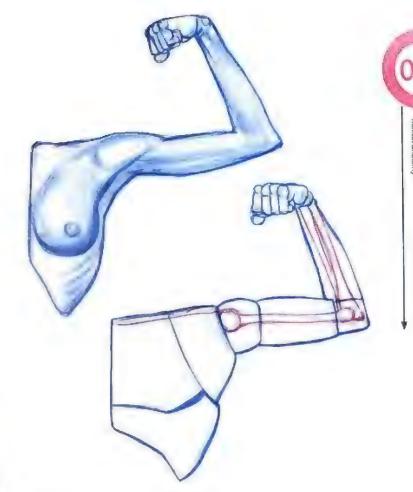
A little bit of detail on these three lumps

Draw with the feeling of wearing it.



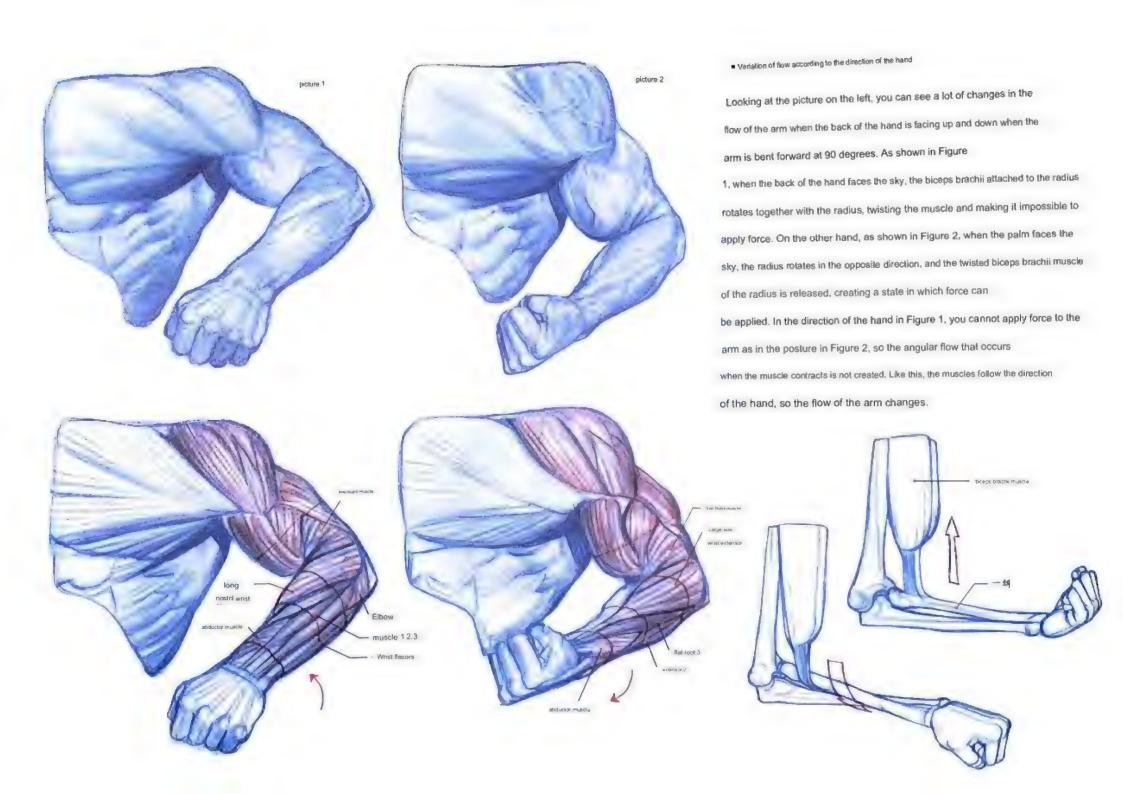
■ Biceps brachii emphasis posture

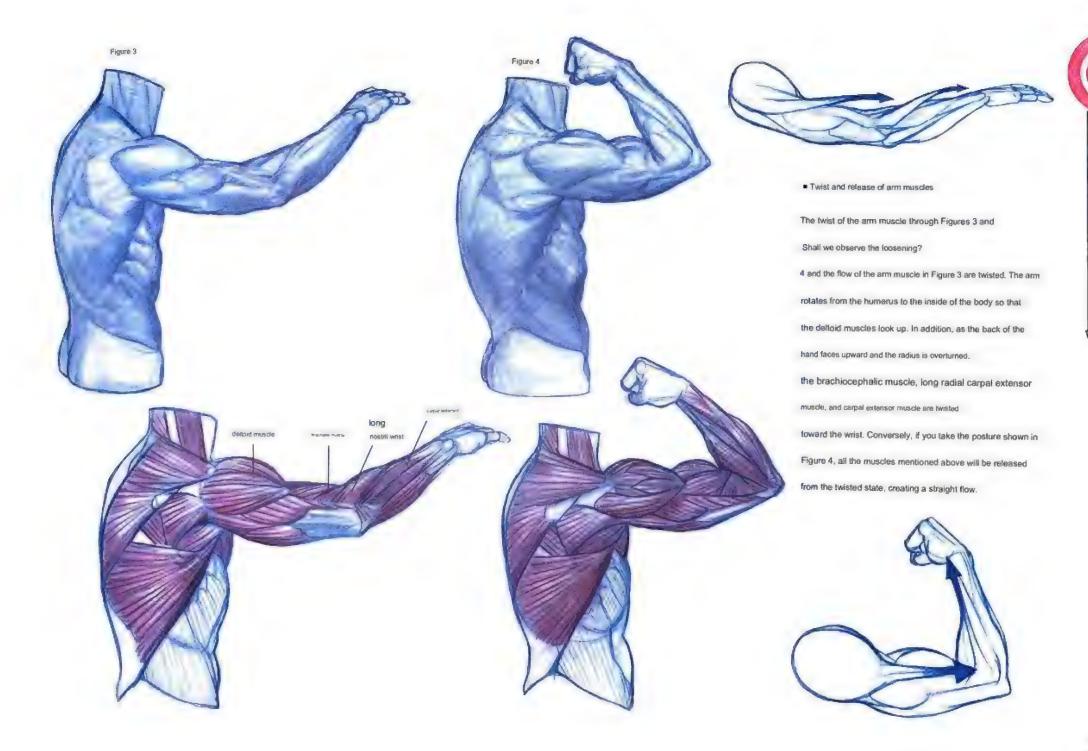


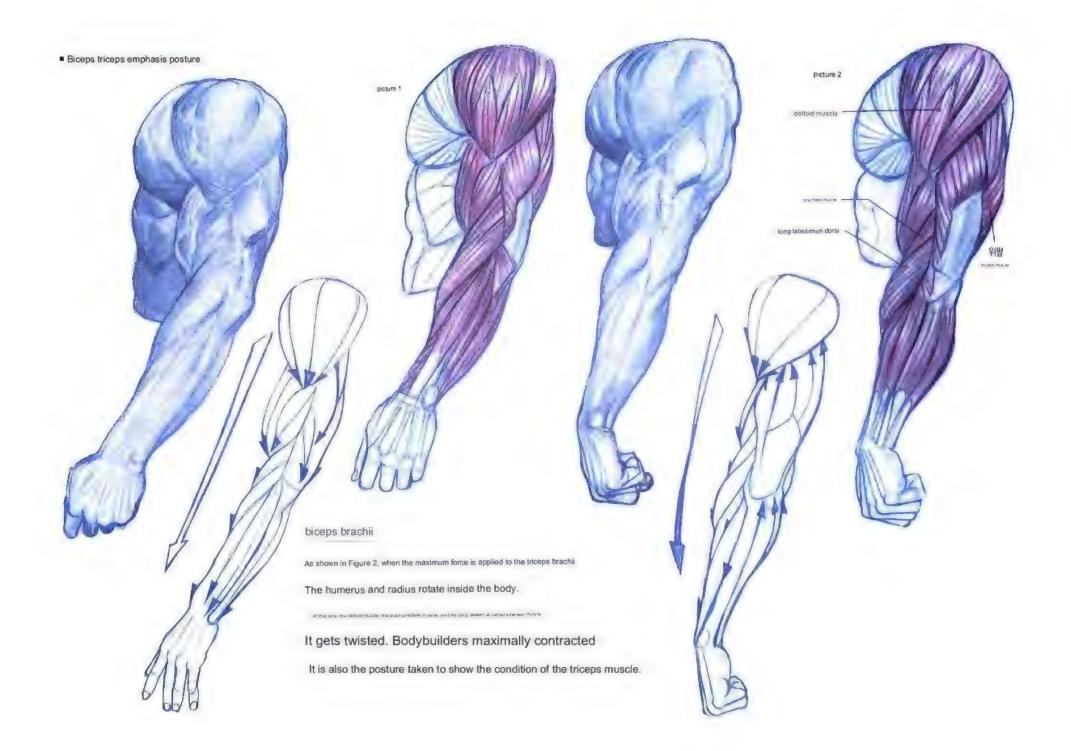


This pose, typical of bodybuilders, accentuates all the muscles of the upper body.

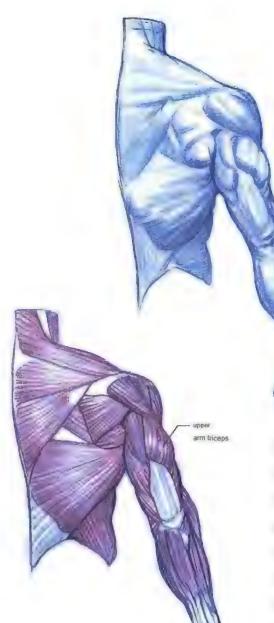
From the front, the biceps brachii and the latissimus dorsi are emphasized, while from the back, the emphasis is on the deltoid, the biceps brachii, and the overall back muscles. When expressing this posture with a picture, it is difficult to locate the ampit area where many muscles are intertwined from the front, and the position of the deltoid muscle that has gone over to the back from the back. In any posture, it is more important to draw a large silhouette than to describe detailed muscles, so try to find the flow in simplified shapes for complex structures.

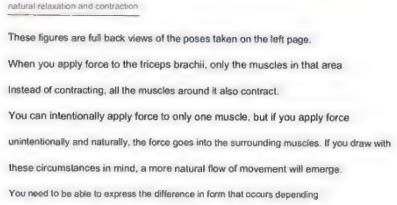




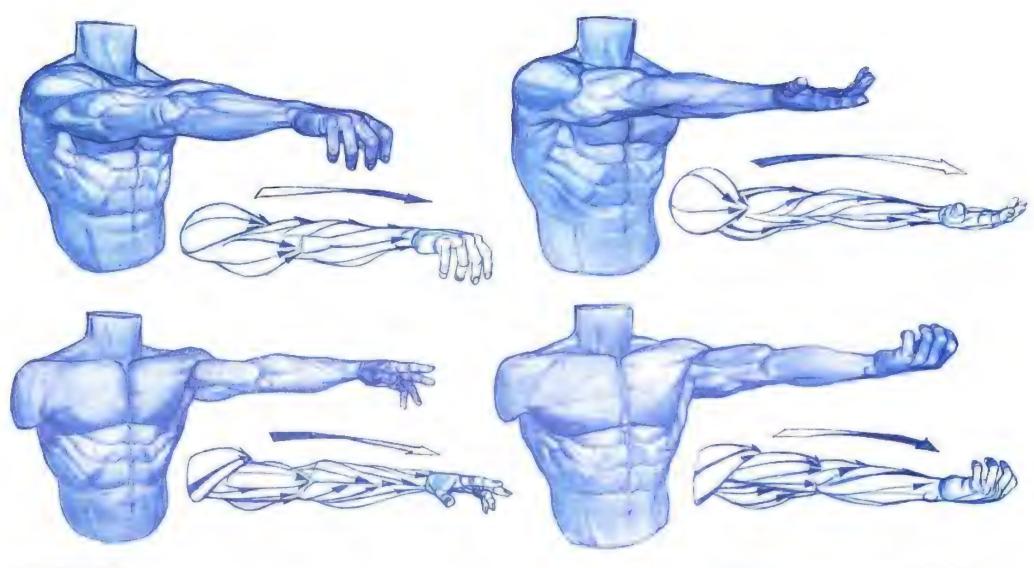








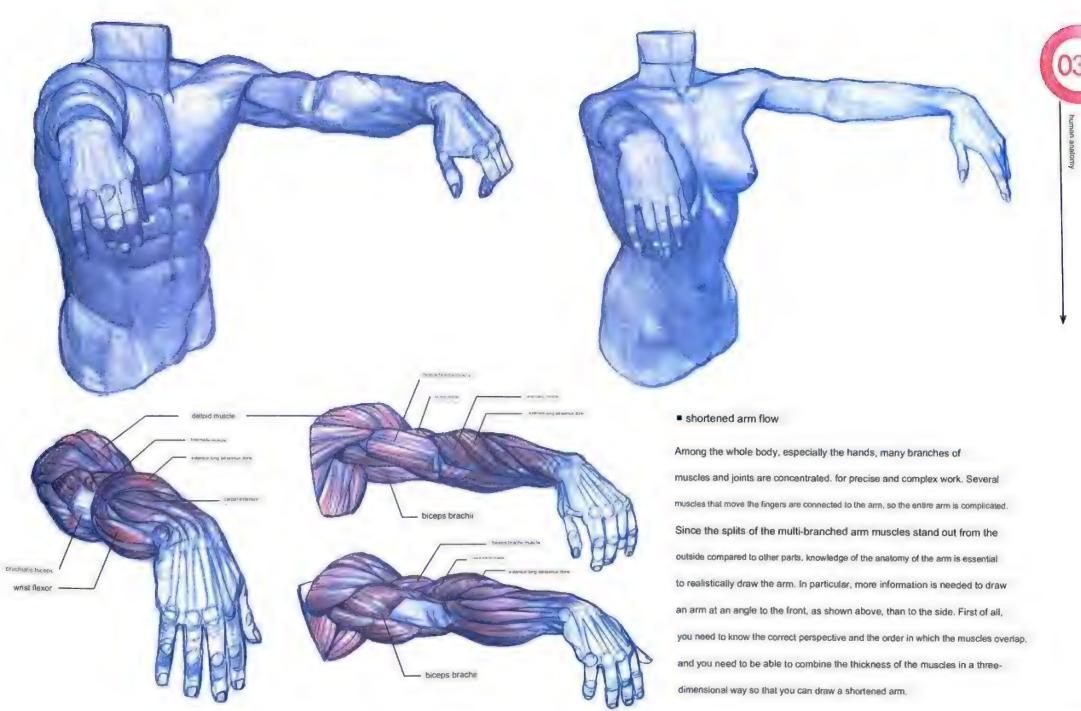
on the state of muscle relaxation or contraction.

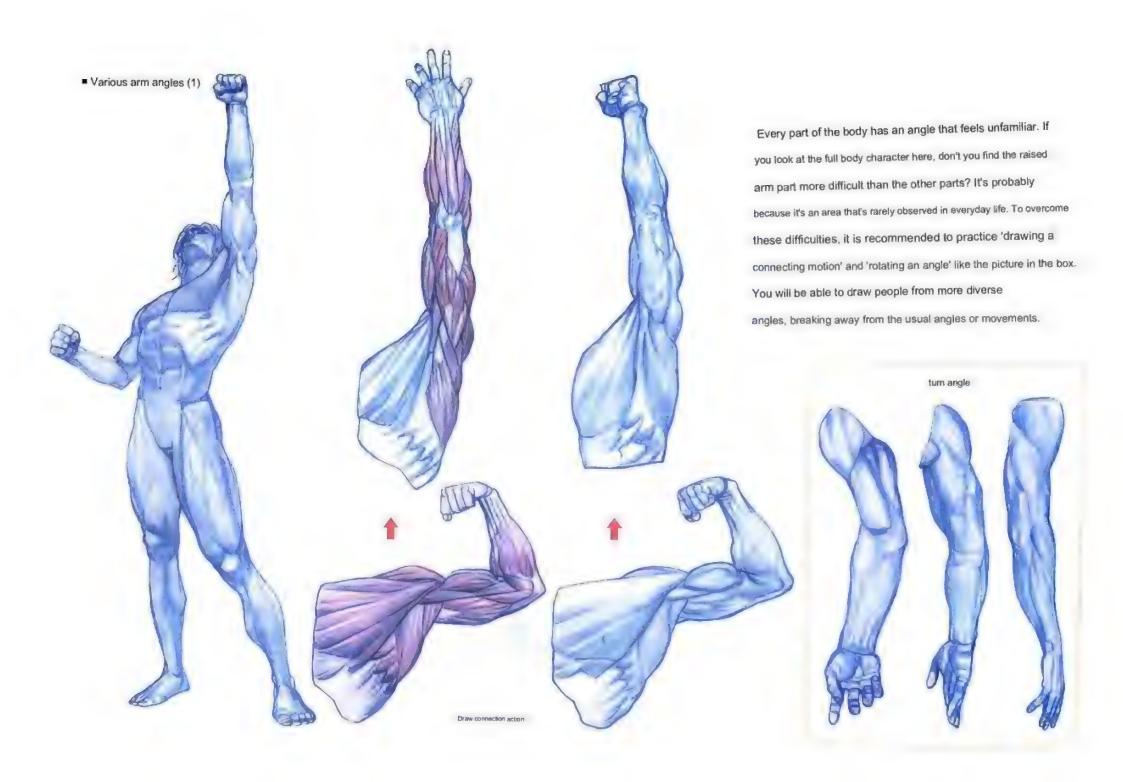


■ Upside-down and bath-sp of the tirm

In the picture above, you can see that the overall outline of the arm changes as the humans head and radius rotate as the hand flips over. When the bone rotates, the muscle also rotates, changing the external flow. Since the flow of the arm is determined by the direction of the hand, draw the arm after holding the movement of the hand first. The reason why muscles are difficult is because the direction of the muscles also changes depending on the movement.







■ Various angles of the arm (2)

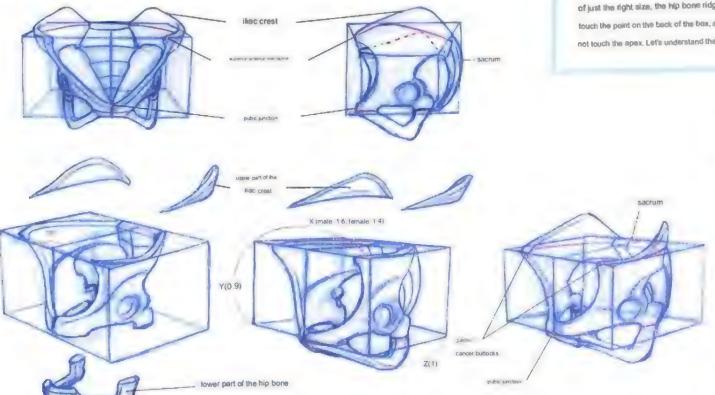


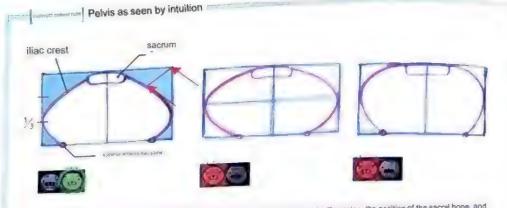
5 Leg muscles location and use

■ Pelvis in the box

important parts of the pelvic bone

Let's learn about the notorious pelvic bone, which is the most complex form of the human skeleton. As you learned in 'Chapter 1 Figures of the Human Body', the more complicated the shape is, the easier it is to understand the structure by simplifying it into a figure. Among the pelvic bones, the part that reveals the shape is the most important. The iliac crest, the superior anterior iliac spine, the pubic symphysis, and the sacral bone are in contact with the skin and affect the external shape. If you understand the location and shape of these four parts properly, you don't need to know so much about the rest of the pelvis.





Let's look at the shape of the iliac creat first. Observe the position of the upper anterior iliac spine, the position of the secral bone, and the flow of the like creat when looking down with a direct feeling. If you put the pelvis as seen by intuition into a rectangle of just the right size, the hip bone ridge will touch the point on the side of the box, and the sacrum will touch the point on the back of the box, as shown in the answer picture. Note that the superior anterior like spine does not touch the apex. Let's understand the low of the ridge by comparing examples of correct and incorrect answers

Drawing the pelvis based on the cube

The length of Y: the height of the superior anterior iliac spine and the pubic symphysis. The length of X: the length at which the iliac wings touch both corners.

As shown in the picture on the left, after drawing a box with the lengths of X, Y, and Z excluding the upper part of the hip wing and the lower part of the hip bone branch, draw the shape of the pelvis inside the box and combine the upper part of the hip bone wing and the lower part of the hip bone branch.

Complete the pelvis. It looks complicated, but as I said before, the shape of the pelvis in contact with the skin is the most important, so simplify and connect the rest of the complicated parts.

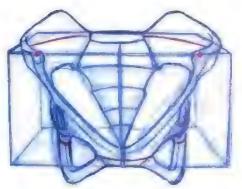




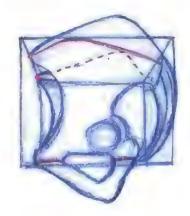


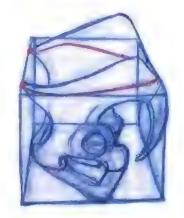


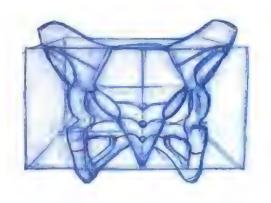


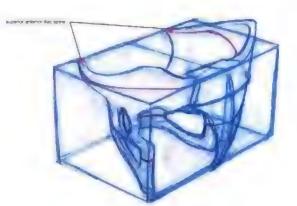












Pelvis at various angles

the aforementioned points

A box proportional to the center

Try drawing from multiple angles.

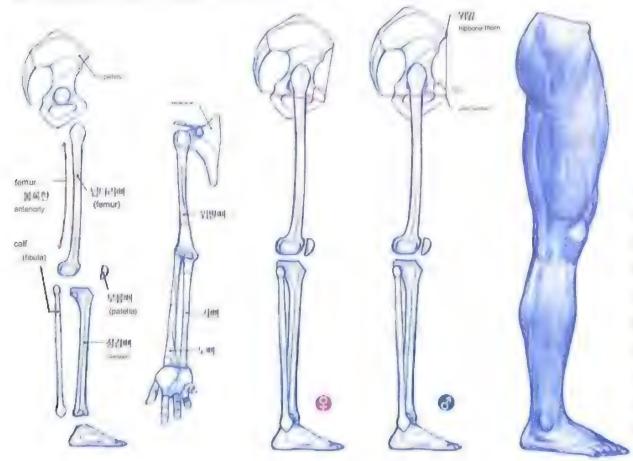
Once you are able to draw a hexahedron in proportion, let's practice drawing the pelvis centered on the point where the pelvis touches the skin inside the hexahedron.



Types of leg bones that compose the lower body

Characteristics of the leg bones (1)

It is divided into the pelvis, femur, kneecap, shinbone, and calf bone. When viewed from the perfect side, in men, the tilt of the superior iliac spine and the pubic symphysis is perpendicular to the floor, and in women, the pelvis has an inclination of the superior anterior iliac spine protruding forward. Men's hips are longer than women's. Also, the femur seen from the side is characterized by a slightly convex anterior rather than a straight line. The calf area is divided into two parts, the shinbone and the calf, just as the forearm is divided into the ulna and the bob. As for the arms, the wrist rotates as the bodice turns over and over, but the ankle has evolved into a sturdy structure to support the weight of the whole body, so it does not rotate as well as the wrist.





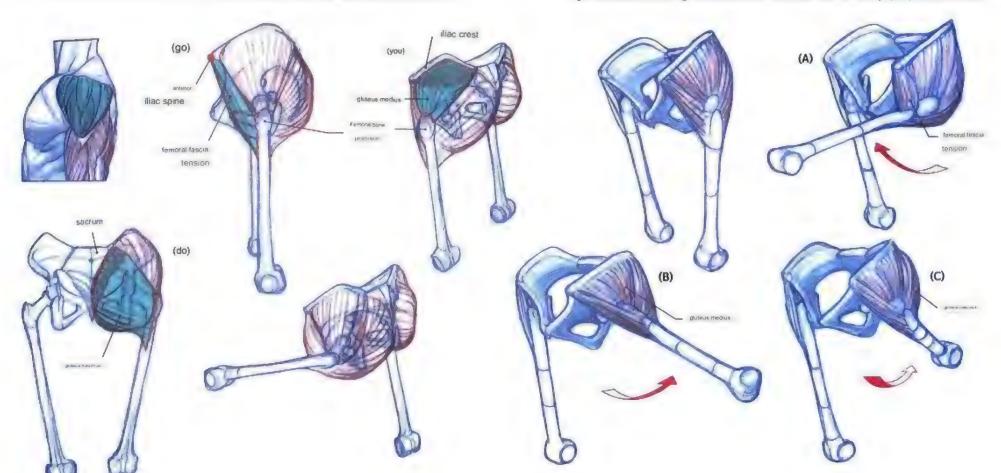
Characteristics of the log biorses (2)

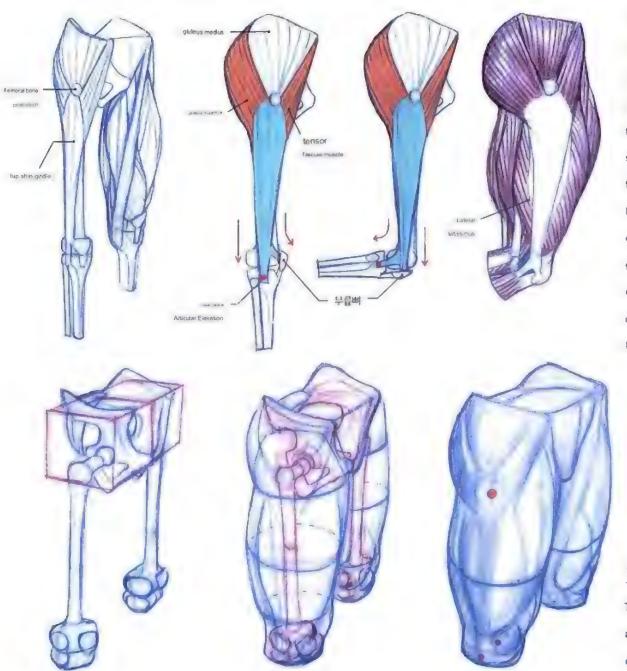
The femoral head is the joint where the femur and pelvis meet. The ball joint is the most flexible of all joints. The reason why the femoral major process protrudes like a hump is to allow the buttock muscles to attach. Originally used as a forepaw, the arms evolved from the legs, so it is very helpful to understand if you compare and study the arms and legs together. Arms and legs have a lot in common, but the kneecap is a bone that is unique to the leg. It is in the same position as the head of the elbow. This patella serves as a lever to move the heavy leg more easily.

The hip muscles do the same thing as the shoulder muscles in the arm. Like the shoulder muscles, the hip muscles are also divided into three. The figure below (a) shows the femoral fascia tensor muscle located in the front of the hip, starting from the superior anterior iliac spine and ending in the greater femoral process area.

The gluteus medius muscle in the picture (b) faces the side of the hip, starting from the iliac wing area along the iliac crest and attaching to the greater process of the femur. Figure (c) is the gluteus maximus attached to the back of the hip, starting from the sacrum and attaching to the area behind the greater process of the femur.

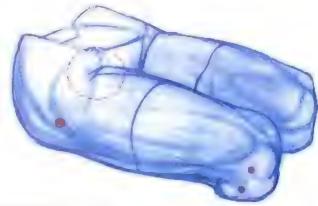
The hip muscles are responsible for moving the legs forward, backward, and sideways. When the femoral fascia tensor muscle in Figure (A) contracts, the femur moves forward. This muscle has a great influence on the flow expression connecting the pelvis and thighs. When the gluteus medius muscle in Figure (B) contracts, the femur bone rises to the side, and finally, when the gluteus maximus muscle contracts in Figure (C), the femur bone rises backward. The gluteus maximus is the largest of the three muscles because it lifts the body up or pushes it forward.





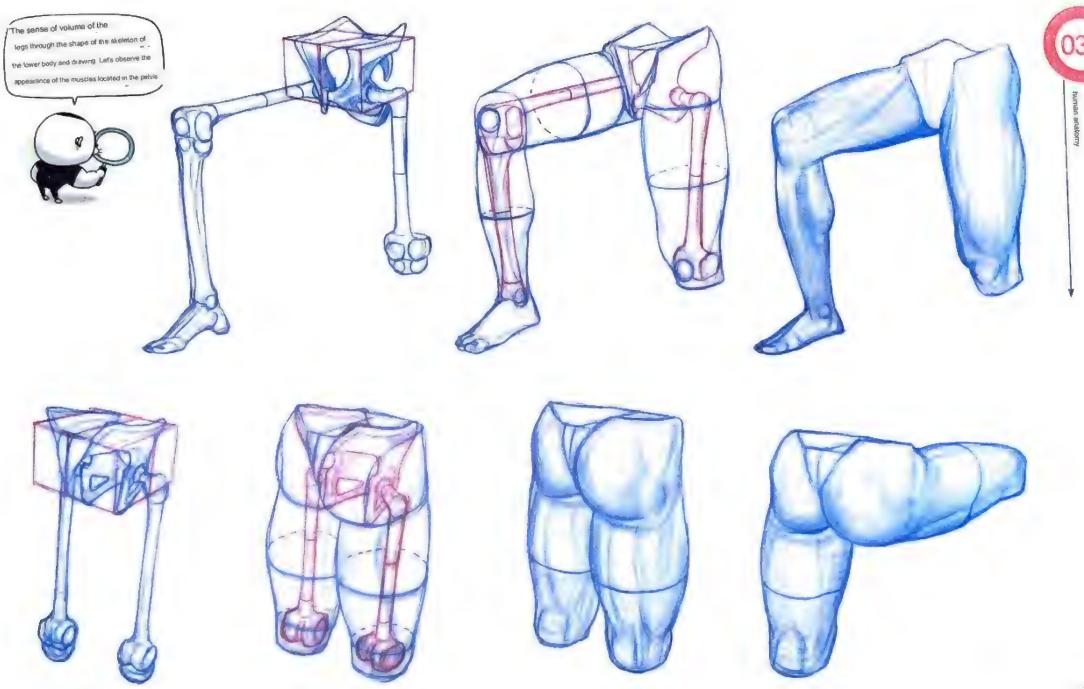
hip shin girdle

Previously, the gluteus maximus muscle and the femoral fascia tendon muscle were simplified and expressed as if they were attached to the femur bone, but in actual anatomy, these two muscles turned into a tendon called the itiac tibial band and descended long toward the patella and shinbone joint condyle, come and stick Between the hip shin girdle and the femur is a muscle called the latissimus familial. Observe the change through the picture on the left as the direction of the end point of the hip shin belt changes whenever the knee is bent or extended. This part is also visible outside the skin, so it is a depiction that cannot be missed. The gluteus medius muscle goes directly to the greater process of the femur and attaches directly to it. Since the muscle does not cover the femoral bone protrusion, it is a visible indicator because it is in close contact with the skin, and it is a part where the outline of the bone can be touched with the hand. Another characteristic is that men are more definitely touched than women.



Thigh points exposed on the outside

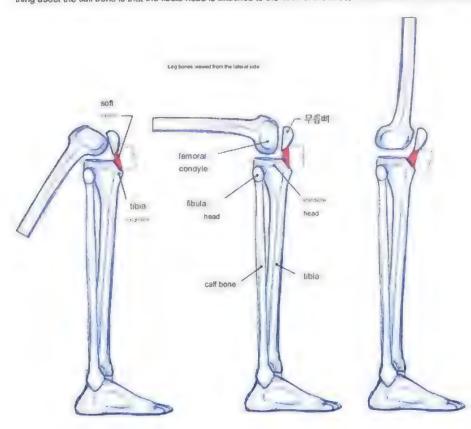
The red dots in the figure indicate the endpoints of the greater femoral process and the iliac tibia. The circled dotted line shows the direction of the specific crease that crosses the muscle over the hamstring muscle when the leg is flexed.

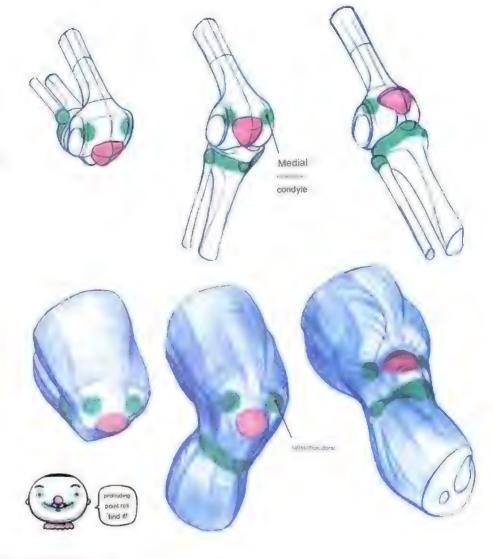


* Structure of the patella that changes with movement

The infationship between the potella and titue

The reason why the femoral joint is bent backward in the shape of a golf club is to create space so that the femur and shinbone do not touch as much as possible when the knee is bent. The femoral condyle is a convex joint and the tibial head is a concave joint. The patella is the cause of the change in shape whenever the knee moves, and is connected to the rough surface of the tibia by ligaments. Because ligaments cannot relax or contract, the gap between the rough surface of the patella and tibia is always the same even when the knee moves, as shown in the ligure below. If you look at the leg from the lateral side, the fibula attaches to the outer line of the tibia. The important thing about the calf bone is that the fibula head is attached to the back of the knee, not the center of the tibia head.

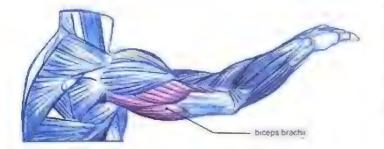




Knee shape according to posture

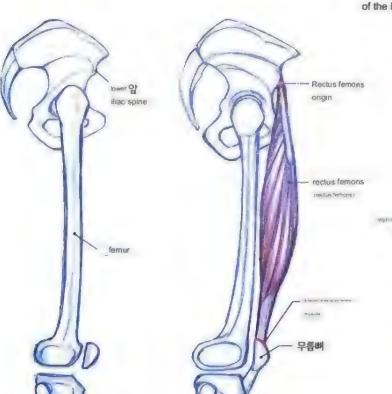
The shape around the knee is heavily influenced by the bones. You need to know the exact position of each bone according to the degree of bending of the knee so that you can create and draw the shape of the knee for each posture without any data. The vastus medialis muscle covers the top of the condyle on the medial side of the femur, so it protrudes more than the volume of the bone. The more the latissimus dofsi muscle develops, the more this area protrudes.

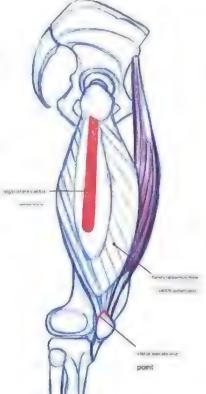
■ Anterior thigh muscles (rectus femoris, vastus lateralis, vastus medialis, oblique femoris)



The rectus femons muscle is the most frontal part of the thigh end the latissimus familial muscle is the largest muscle in the lower body.

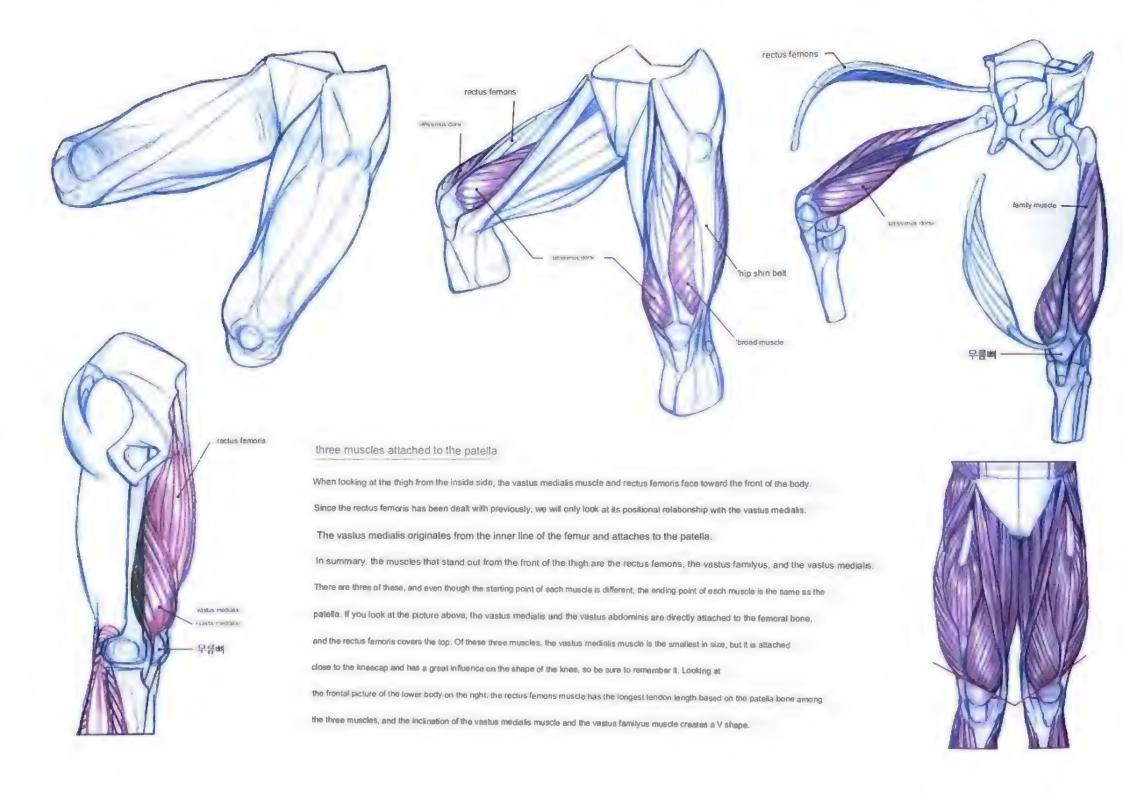
The muscles in the front of your thigh are used to straighten your knee. Comparable to the arm, it acts like the triceps muscle, which allows you to straighten your arm. When looking at the thigh from the outside, the rectus femoris and the latissimus familial muscle are in the front of the thigh. The rectus femoris originates from the lower anterior Iliac spine and attaches to the patella. It is the muscle that stands out the most when looking at the thigh from the front. Next, the abdominis muscle starts along the lateral aspect of the femur and attaches to the patella. The latissimus dorsi muscle looks small from the front, but when viewed from the side of the thigh, it occupies a large area and volume, and is actually the largest of the lower body muscles. The outward protruding flow seen in the developed legs of athletes is created by the latissimus dorsi.

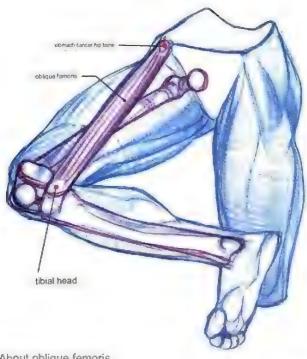








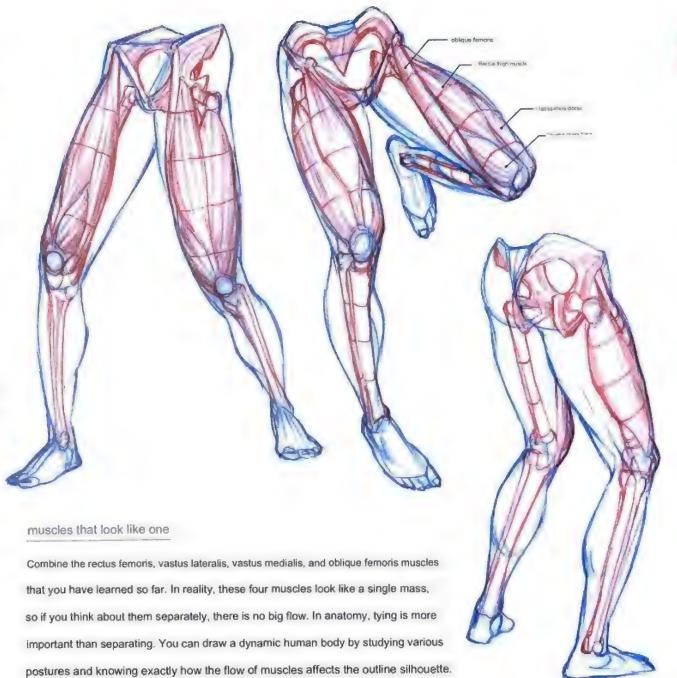


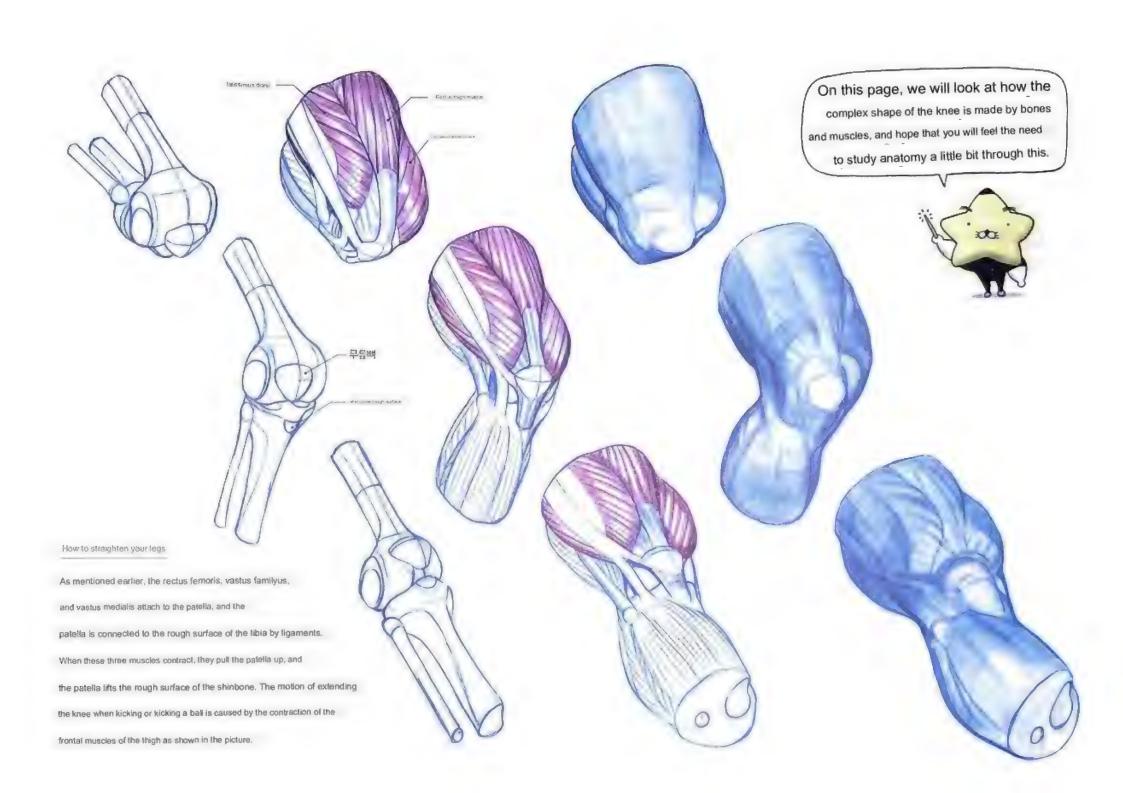


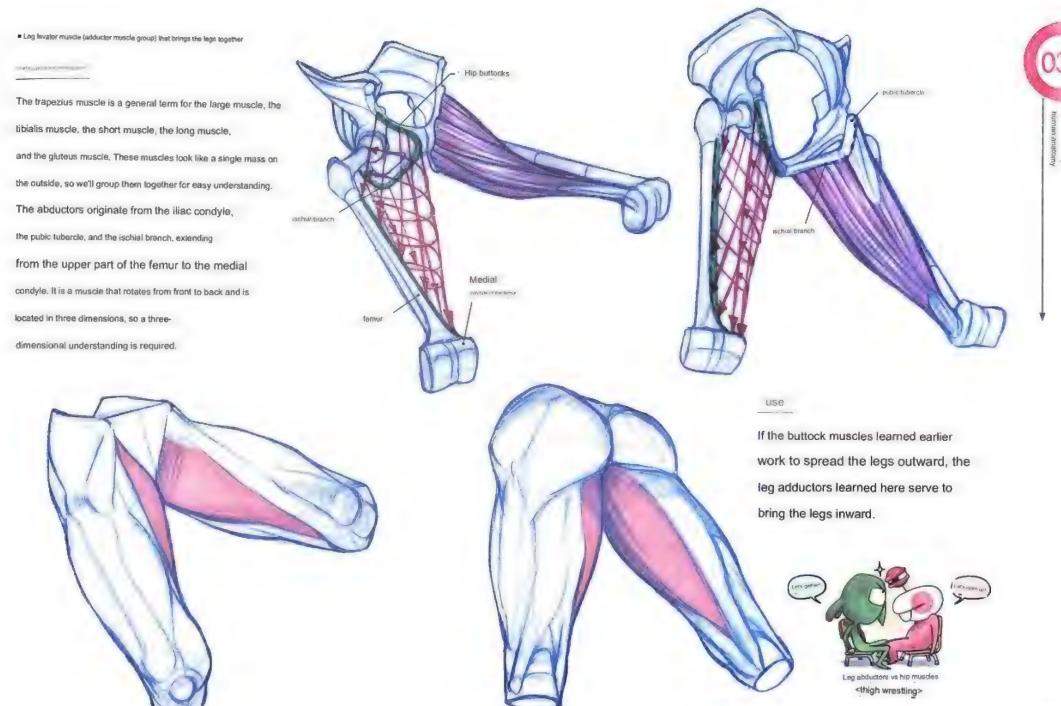
About oblique femoris

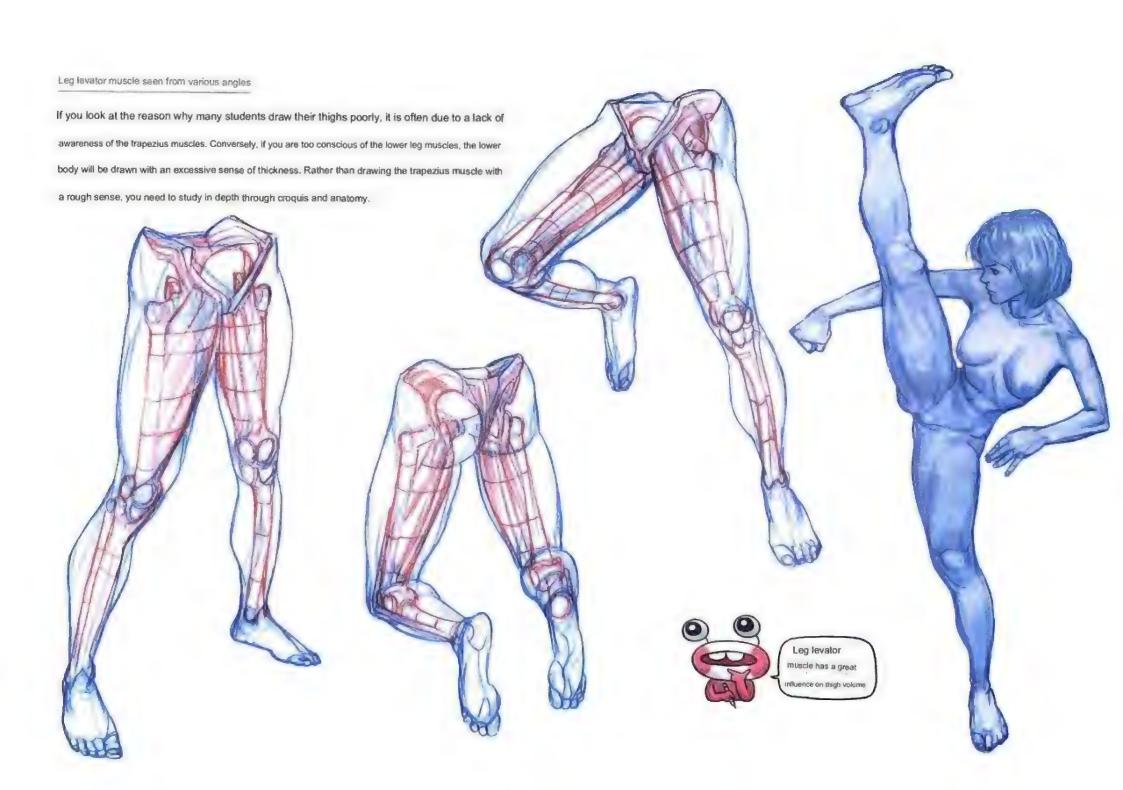
The oblique femoris muscle visually divides the boundary between the front of the thigh and the inside of the thigh. Therefore, in order to accurately capture the flow of this boundary, we need to know the location of the start and end points. The oblique femoris originates from the superior anterior iliac spine and attaches to the inside of the head of the tibia. As shown in the picture below, this muscle plays the role of lifting the leg while rotating it inward when taking a kicking posture.







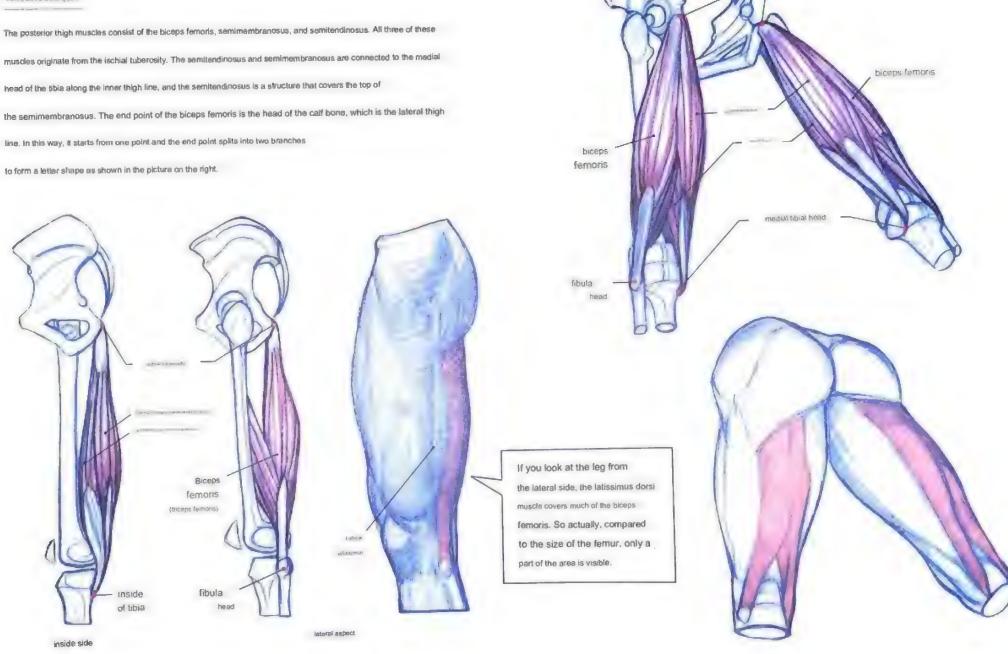






■ Posterior thigh muscles that bend the knee (biceps femoris, semimembranosus, semitendinosus)

Starless poors and ensing poors

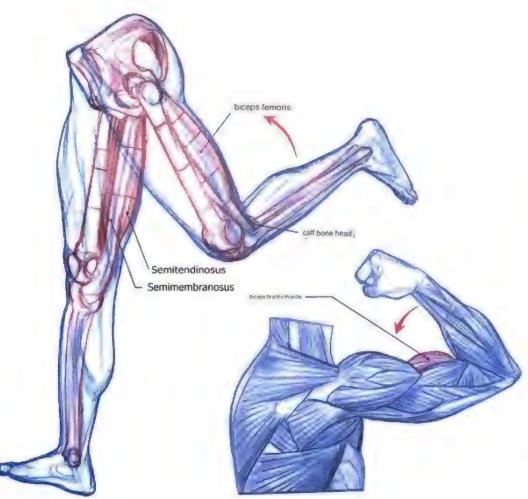


궁둥뼈결찰

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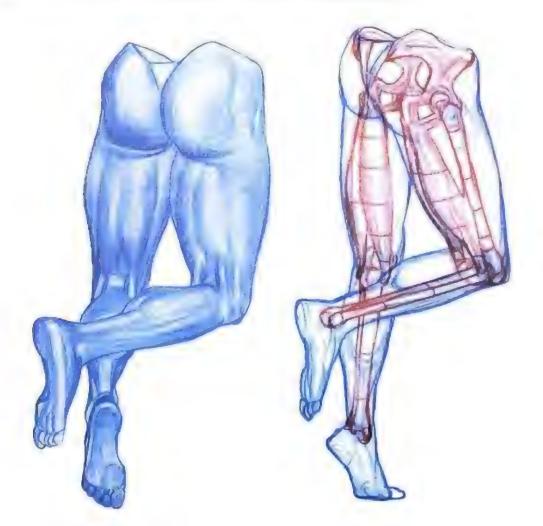
The back thigh muscles are 'flexors' that work the same as the biceps brachii of the arm. The biceps femoris, semitendinosus, and semimembranosus muscles are used when bending the knee backward, and work opposite to the muscles in the front of the thigh. As shown in the picture below, the motion of kicking off the ground backwards while running is possible thanks to the muscles in the back of the thigh.







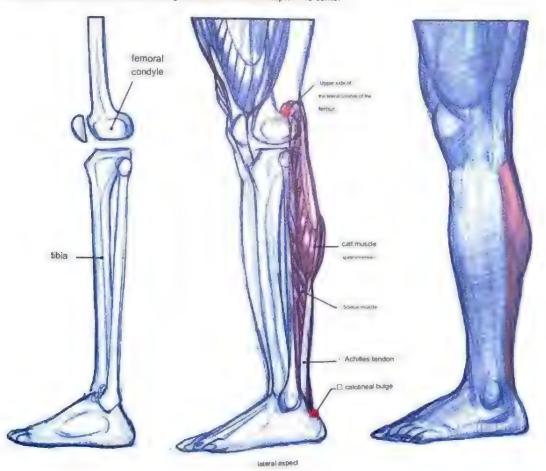
When expressing the biceps femoris, semitendinosus, and semimembranosus, the point is to draw the tendons protruding tautily from the back of the knee. In particular, the tendon point where the biceps femoris on the outside is connected to the head of the calf bone stands out prominently regardless of gender. Therefore, it is very important to accurately know the location of the fibula head and the direction of the tendon of the biceps femoris. As you look at the pictures on this page, take a closer look at how the muscles in the back of your thigh are split in two when you bend your leg, and when you straighten your leg, it's bundled together because you don't have enough strength.

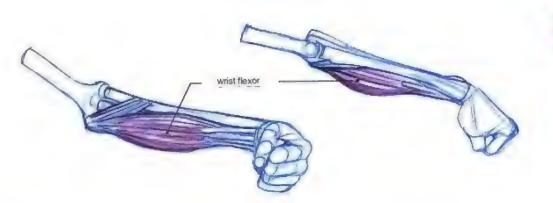


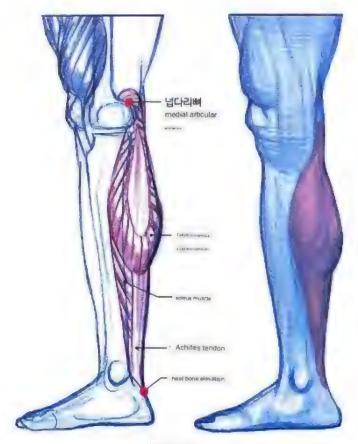


Desired the property of

Compared to the arms, the muscles on the back of the calf, which play a role similar to the wrist flexors, have the soleus muscle attached to the tibia and the calf muscle superimposed on it. The calf muscle is divided into two branches, each starting on the medial and lateral superior surfaces of the femoral condyle, and turning into the Achilles tendon at about a point along the entire length of the calf muscle. The Achilles tendon attaches to the calcaneal eminence. The soleus muscle is mostly covered by the calf muscle, so only a little bit is visible on each side. We will go into more detail in Chapter 4 to come.

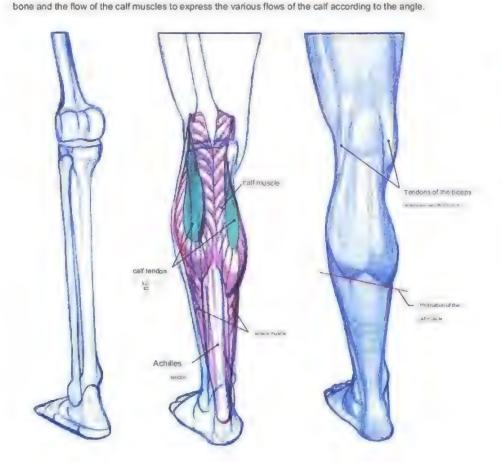


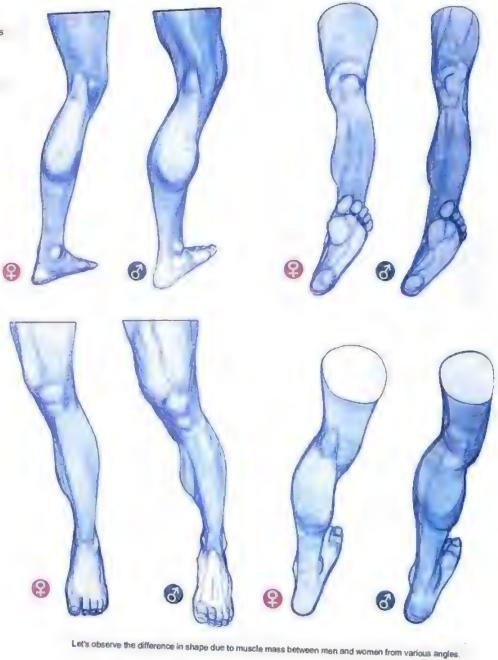




inside side

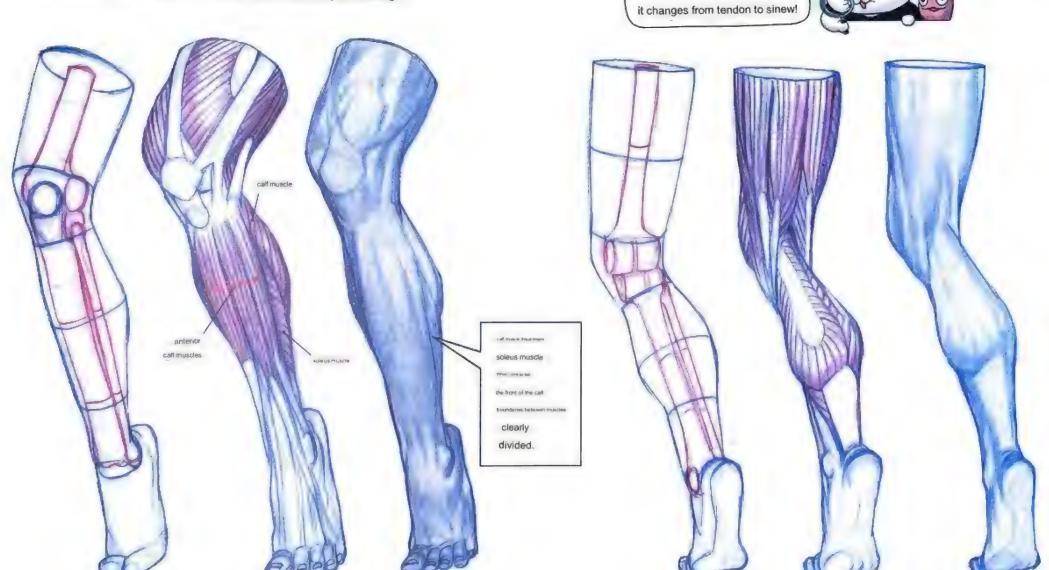
In the picture below, you can see the gastrocnemius muscle, which begins with the two branches mentioned above and merges with the soleus muscle at the Achilles tendon. The back of the knee is a form in which the upper part of the calf muscle digs between the rulers of the biceps femoris muscle and the semitendinosus muscle. The part marked in green in the figure is the tendon area of the calf muscle. Observe the difference between the two shapes as the tendon area is flat and the tendon part has a thick volume. Since the length of the inner calf muscle is longer than the lateral calf muscle, this slope should always be expressed for a natural calf flow. The calf area is difficult to express because the flow is constantly changing depending on the angle. You need to accurately understand both the curve of the





When the calf muscles and soleus muscles contract, the heel is pulled up to create a tiptoe position. It

is a muscle used in most basic movements such as jumping, walking, and running.



Pay close attention to where

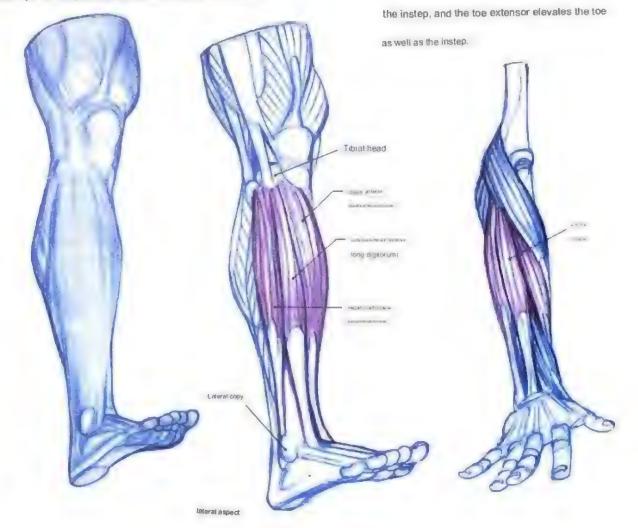
Anterior calf muscles (tibialis anterior, extensor toes, calf longus)

inside copy

Inside side

hed potas bear, preda

Just as the wrist extensors are largely divided into three strands, the muscles in the front of the calf are also divided into three groups. The antenor tibialis muscle and extensor foe muscle originate from the tibia head, and the calf long muscle originates from the fibula head. The antenor tibialis muscle goes in front of the medial oblique muscle and attaches, and the long toe extensor muscle goes in the middle of the instep and attaches to each of the four toes except the big toe. The long calf muscle goes behind the family foot and attaches to the sole of the foot. There are other small muscles, but they are not very noticeable in appearance, so I will omit them.



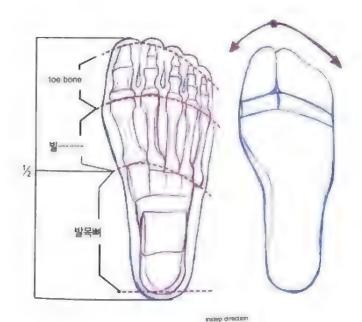
use

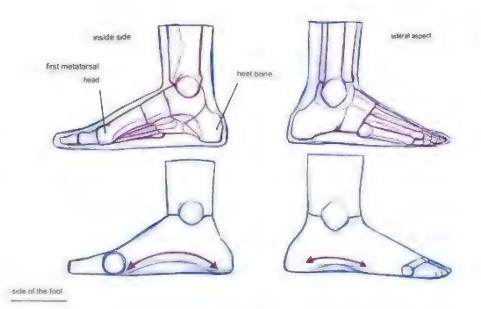
The muscles in the front of the calf are commonly used

to elevate the instep, and work in opposition to

the muscles in the back of the calf. The tibialis

anterior muscle and the calf longus elevate



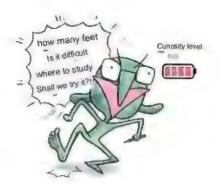


When looking at the feet from the medial and lateral sides, the common feature is the appearance of an arcuate flow, and the difference is that the arch is wider on the medial than in the family. This arch serves as a cushion to support your weight.



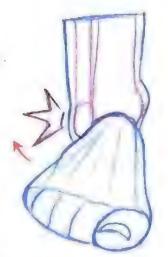
front and back of the foot

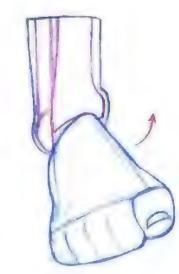
If you look at your foot from the front, it changes from level to arch as you go up from the tip of the toe to the instep. The instep ridge, which is the center of the arch, is located on the border between the thumb and index finger. You can see from the picture above that the flow of the inner arch is steep and the flow of the family arch is gentle around the instep ridge. The arch form from the front also provides a cushioning effect just like the side. The inclination of the malleolus on both sides of the ankle is not horizontal, and the medial malleolus is higher than the lateral malleolus.



side-to-side mayament of the ankle

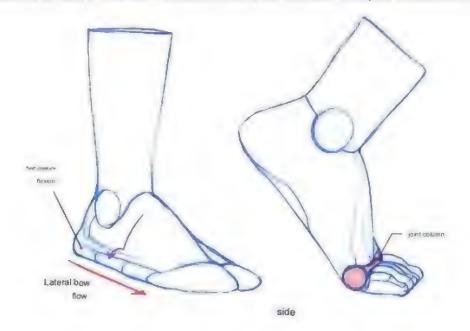
Looking at the left and right movements of the ankle, the ankle bends more inward than outward. The reason is the position of the ankle bone. The lateral malleolus is located lower than the medial, limiting outward movement (right picture). This is why we often fold inwards rather than outwards in our daily lives.

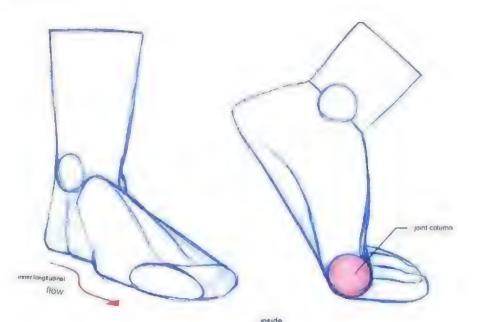




foot features

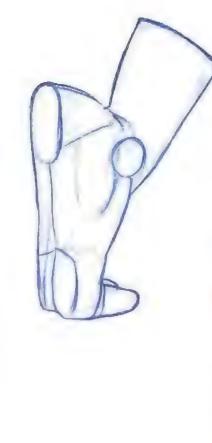
To simply understand the movement of the toes, tie them with the big toe and the other four toes, and then move the toes around the joint pillar (picture below). The familial arch of the foot is straight and the medial longitudinal arch is curved. Please be careful as many students often make the mistake of drawing the flow of the family vertical bow curved like the inner vertical bow. As in the first picture, when the foot touches the floor, the lateral blade is pressed by the body weight, creating a flexion of the flesh. When looking at the foot from the family, the entire toe is visible, and when viewed from the inside, the rest of the toes except for the thumb and index finger are covered.





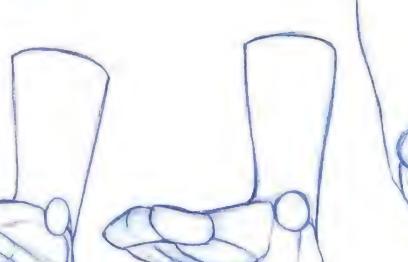






"sole...









We usually rarely draw angles where the soles of the feet are visible.

Because there is not enough research on the soles of the feet

I find it vaguely difficult.

In that case, as shawken the picture above, the sole of the foot is divided into three areas.

It's easier to understand if you think about it.

By applying this method, the soles of the feet

Practice drawing the angle you see.



structure of the toe

If the structure of the toe is simplified into a figure.

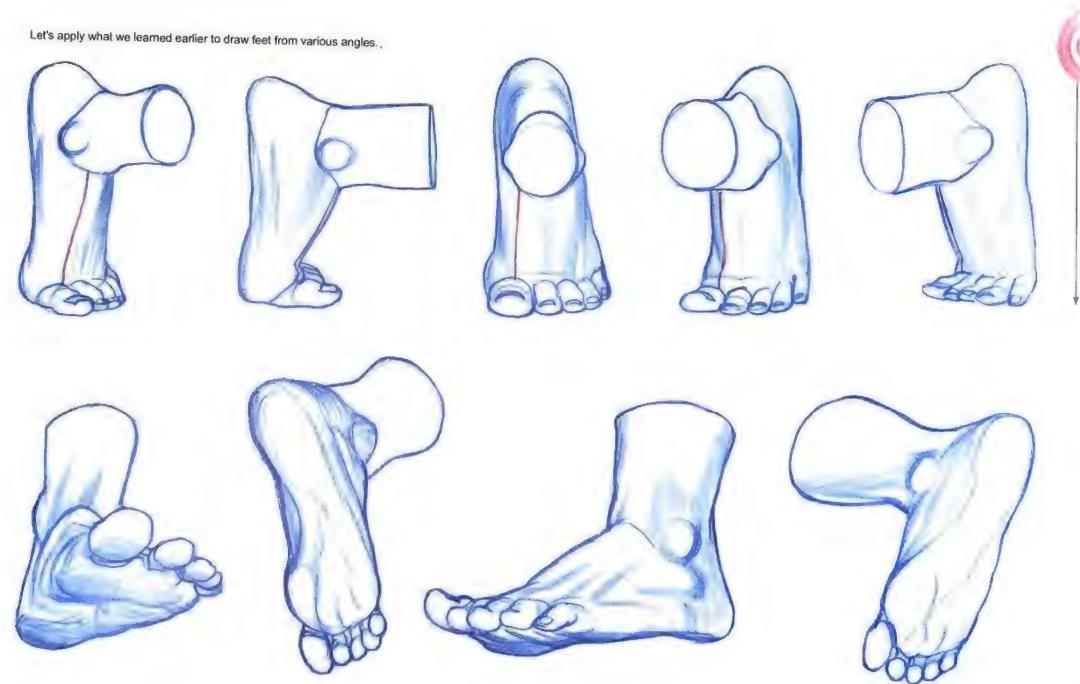
Angles are cascaded.

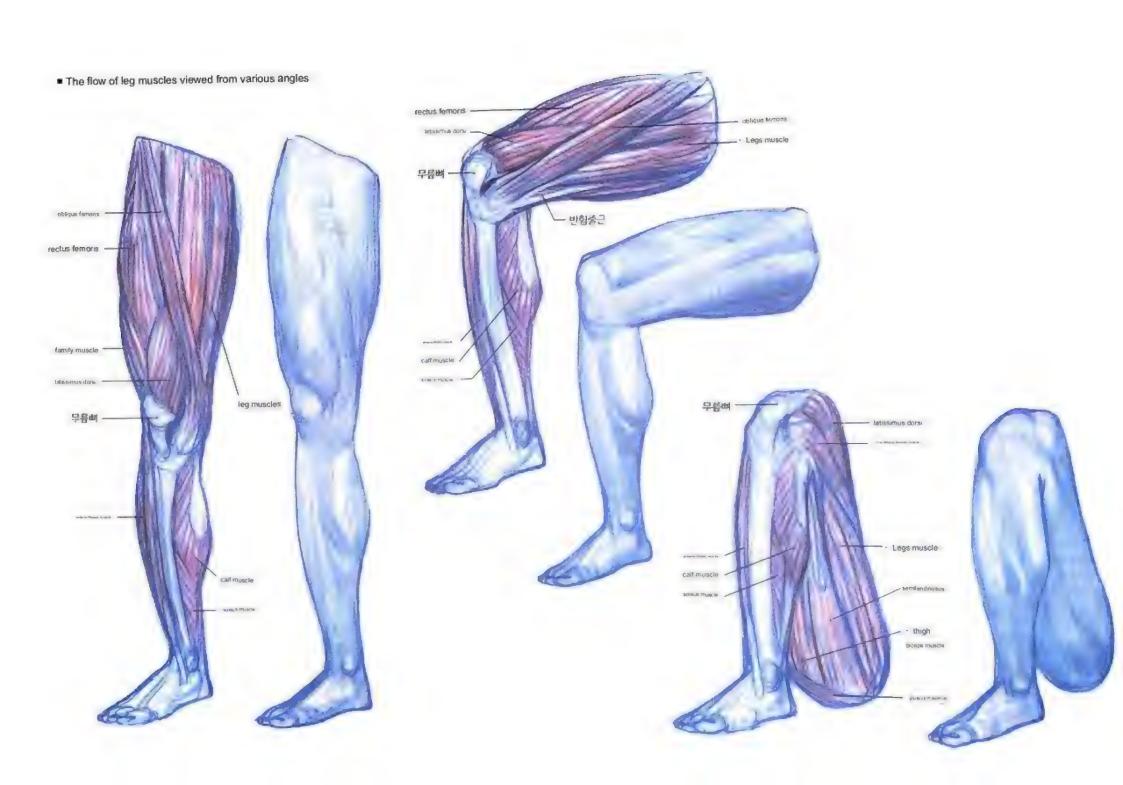
On top of this basic flow

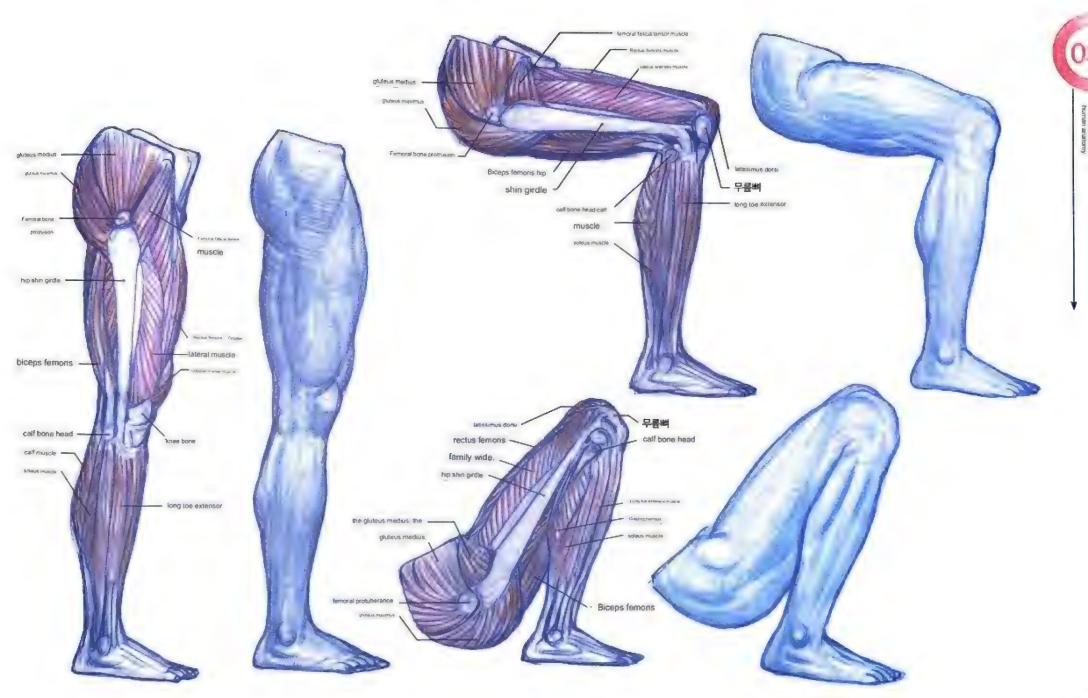
Evolve your form.

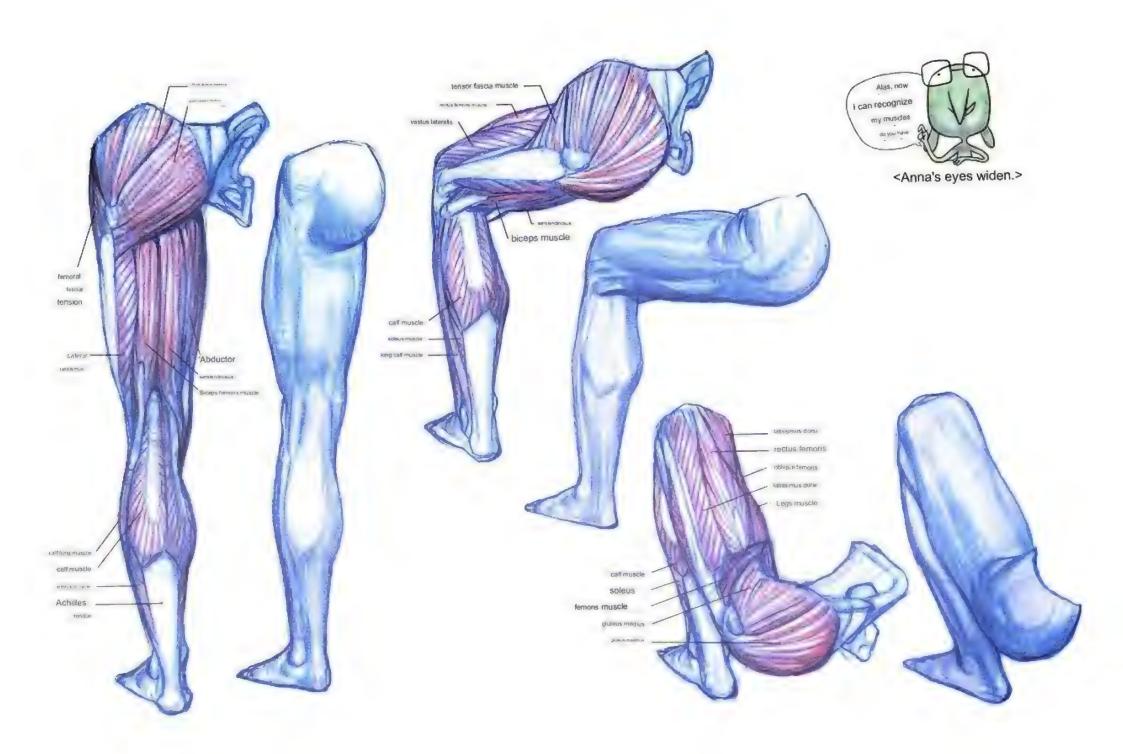


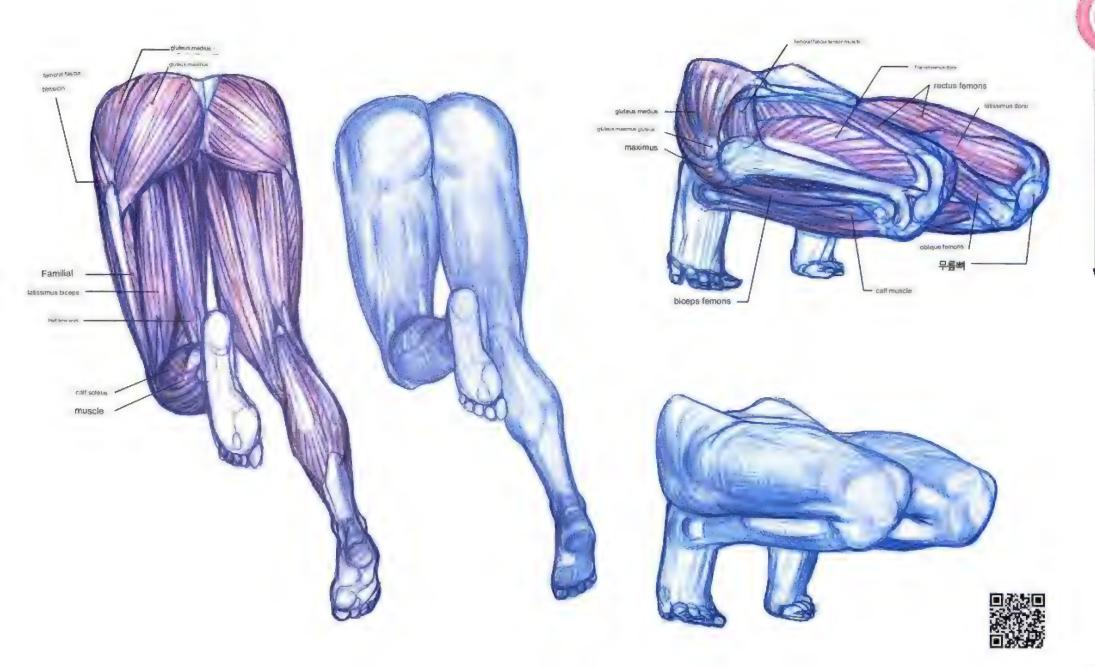












Collaboration of figure drawing and anatomy

After studying figure drawing and anatomy and being able to express the basic human body, it is now time to think about what kind of acting to make the character do. For example, if you are drawing a character sitting down, simply 'sitting down' is not only boring to draw, but also gives no special fun to the viewer. If you think about 'how' to sit according to the character's emotion or personality, the range of expressions will be enriched. You can tell a story in just one pose.



While many people find it enjoyable to set up the concept of a character like this, the next step is a bit of a headache. 'Where is the weight placed?', 'Is the movement of this joint in a natural state?' You have to be specific.

When I learned each one separately, I understood it, but when I tried to apply it in a comprehensive way, each piece of information was not connected and I drew as

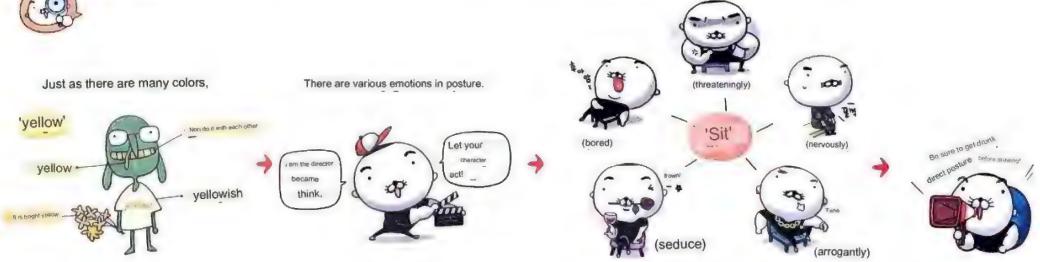
Adding this sense of realism gives the character life and persuasiveness.

However, it is not as easy as you think when you try to apply what you have learned in theory to the posture you want to draw.

usual. In this chapter, we will find out how the theories learned above are actually applied through data drawn with figures, anatomy, and real-life male and female for each posture. In addition,

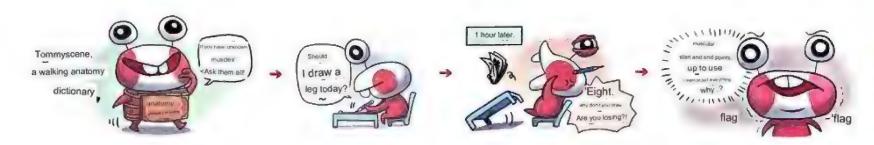
we will understand the form from various angles and study the characteristics of movement by examining each posture with various angles, continuous movements, and applied movements.







Now it's a practice!























Just as knowing how to exercise doesn't build muscle, neither does drawing.



Because if you think you know, you don't practice

When you define 'knowing', it's not theoretical knowledge, but can you draw? don't you have It is better to judge by



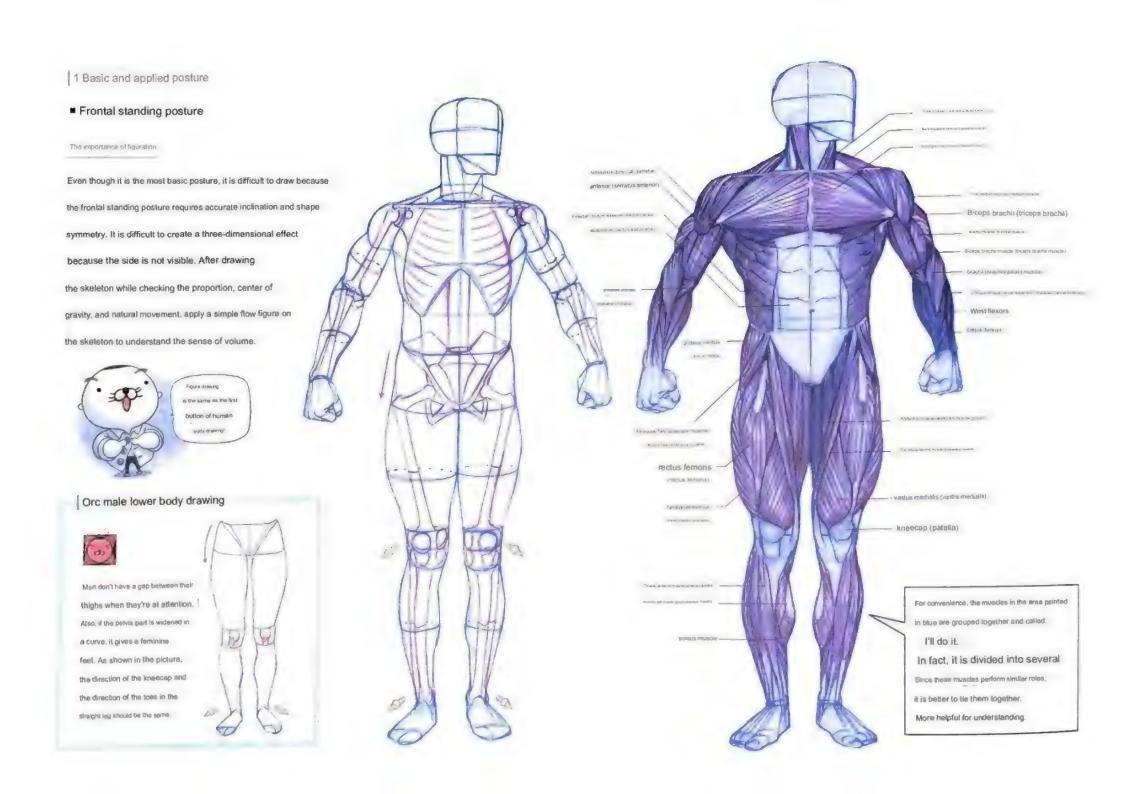




Not so! Just like
if you exercise in
the wrong way, you will
get hurt. Theory
must be studied.

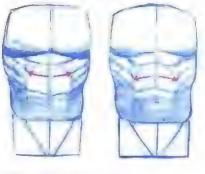
Now, let's learn how the theory is applied in actual drawing!











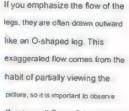
Various shapes of the rectus abdominis muscle

The shape of the rectus abdominis differs from person to person.

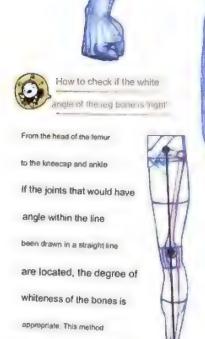
there is.

- Incorrect answer note exaggerated leg line





the overall flow of the picture while drawing.



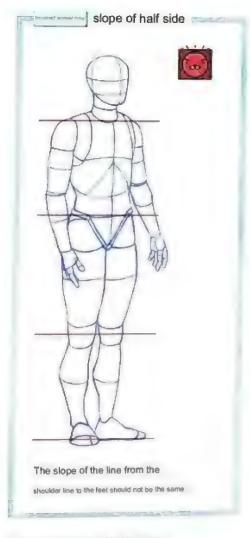
can be applied at any angle as

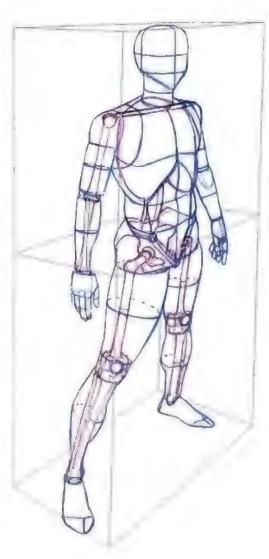
in the volume and muscle
made of the torso ribe create the
characteristic allowates of
create and terrallé binos

The flow of the lower body of men and some seen from the front in men, the vastus laterals muscle alands out the most, and it changes from tendon to tendon toward the knee, rapidly reducing the sense of volume. In women, the flow of soft curves is connected to the knees, centering on the pelvic area where fait is accumulated due to the influence of femals homones.

long as the knee is not bent.

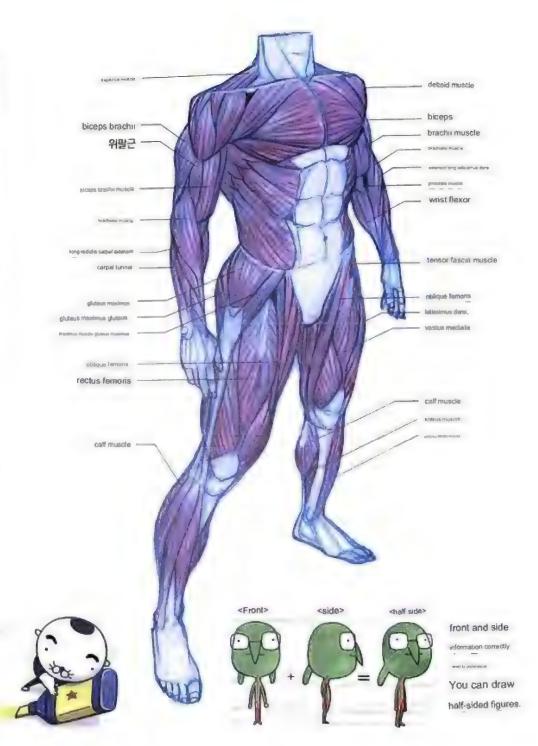
■ Half-side standing posture

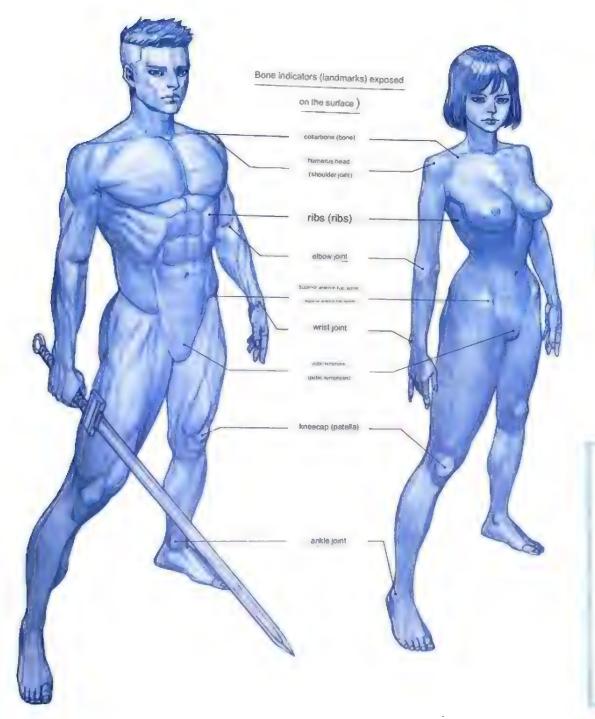




Draw a character that fits the space

The slope of the horizontal line of the body becomes steeper the further away from eye level. Even if you draw the proportions and shapes of the human body correctly, if the viewpoint and center of gravity are wrong, it will look unstable and result in a flat picture. You can draw a three-dimensional character more easily by setting the eye level first, drawing a hexahedron suitable for it, and then drawing a person inside the hexahedron. Before drawing a character, make a space first!







human body flow in hemitateral view

As we learned in Chapter 1, the flow of the human body in the full side is not vertical, but curved, and the lower body also falls backward to balance the leaned upper body. This feature is more evident at the rear angle, where the curvature of the spine is visible.

The reason why it is difficult to draw a natural standing posture is that the curved flow of the whole body and the tilt that changes according to the perspective must be applied at the same time.

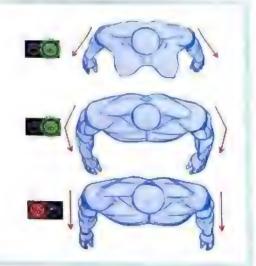
Draw the character at half-side angle by default

It is almost memorized by game artists

It's a familiar posture to practice.

Incorrect note Flow of male and female arms.

standing with both arms relaxed in this state, women's arms are bent outward. This O-shaped flow of the male arm is particularly difficult to express from the half-linteral angle. As shown in the bottom picture, there are many mistakes in drawing the half side by thinking of the arm as the shape of the letter 11, so be careful.

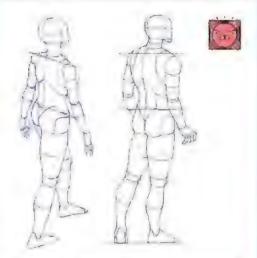


Basic half-side posture viewed from the back

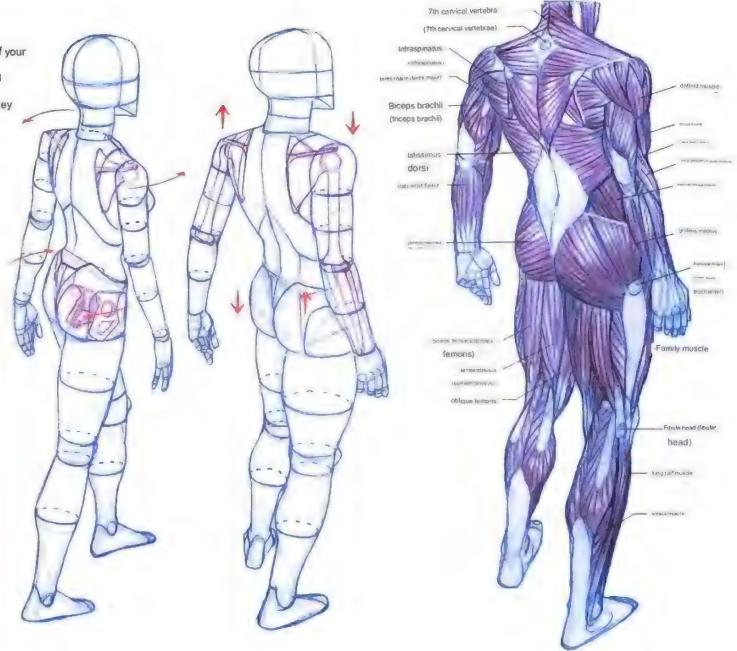
Homilateral view from the back, male and female flow differences

Unlike standing still, when you walk or cross-legged, the tilt of your pelvis and shoulders changes. When walking, the shoulders and pelvis cross back and forth, and when standing on one leg, they cross up and down. The shoulders are fixed, but the overall flow should be in line with the movement, rather than drawing only a partial pose, such as with only the feet on one leg. The reason why the whole body reacts to a slight movement is to adjust the center of gravity.

Mistakes When Drawing Grant's Basic Pose



Adjust the shoulder tilt, petvis tilt, and foot position to the same tilt.
 When drawing parallel or all horizontally ②
 When drawing feet to the side regardless of eye level.
 When drawing the waist in a straight line.





Shape with muscle flow

When drawing men, the flow of muscles is added differently from women. Do not describe the muscles realistically from the beginning, but first create a figure of the muscles as shown in the picture below.

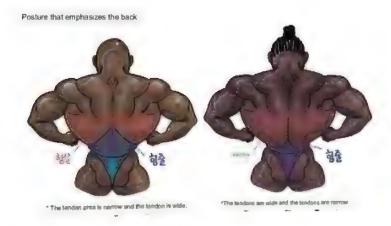


Incorrect note The flow of the calves expressed excessively



The calf is an important part that creates the most dynamic flow of the whole body. As a result, the flow of the calves is often emphasized, especially in cartoon style. However, in dramatization, unlike in cartoon style, emphasizing the flow of the calves makes the human body look wrong, so it is important to express the actual flow as it is. The flow of the calves varies depending on the viewing angle. For example, a bow looks curved from the side, but straight from the front. Even the curvilinear flow of the bridge is sometimes seen as a straight time.





Just as each person has a different face and body shape, there is a slight difference in the ratio of tendons to tendons in muscles. So, after studying the position of the muscles, look at the photos of various models, identify the differences, and decide the body type you prefer. If you study only one material, you will have difficulty studying muscles because it is

not compatible or applied with many other model photos.

broadest muscle, latissimus dorsi

Differences in muscle appearance

The latissimus dorsi is the largest muscle in our body. There are still traces of evolution from apes that lived hanging from trees. The latissimus dorsi muscle has the greatest difference in muscle mass before and after exercise compared to other muscles. Since the arms are spread out wide when they are spread out to

the side, filness trainers use wide rounds.

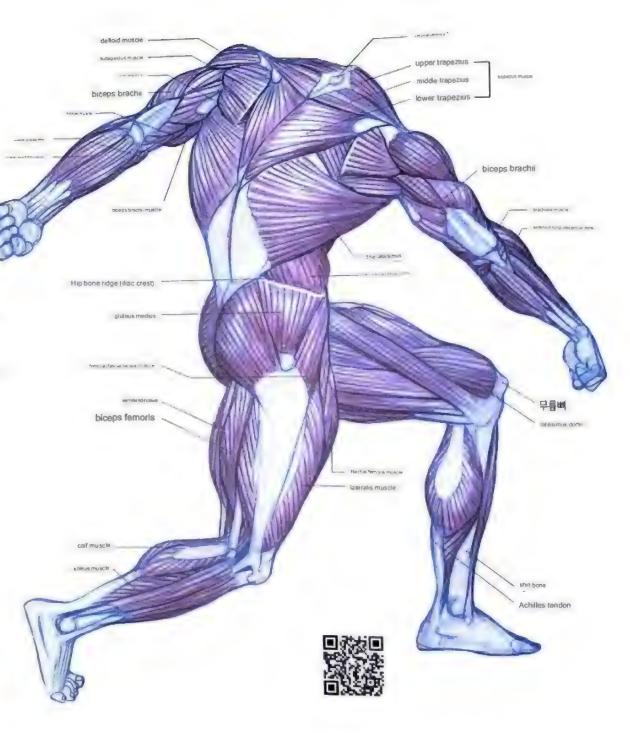
on the wings of a flying squirrel

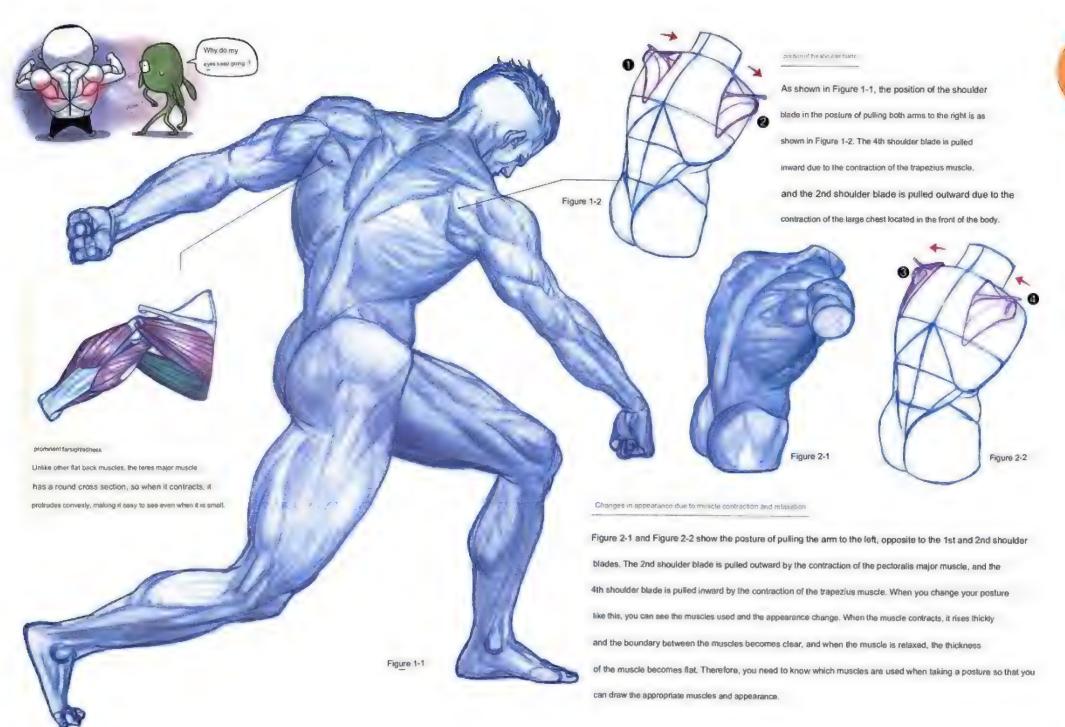
l can even

compare it.

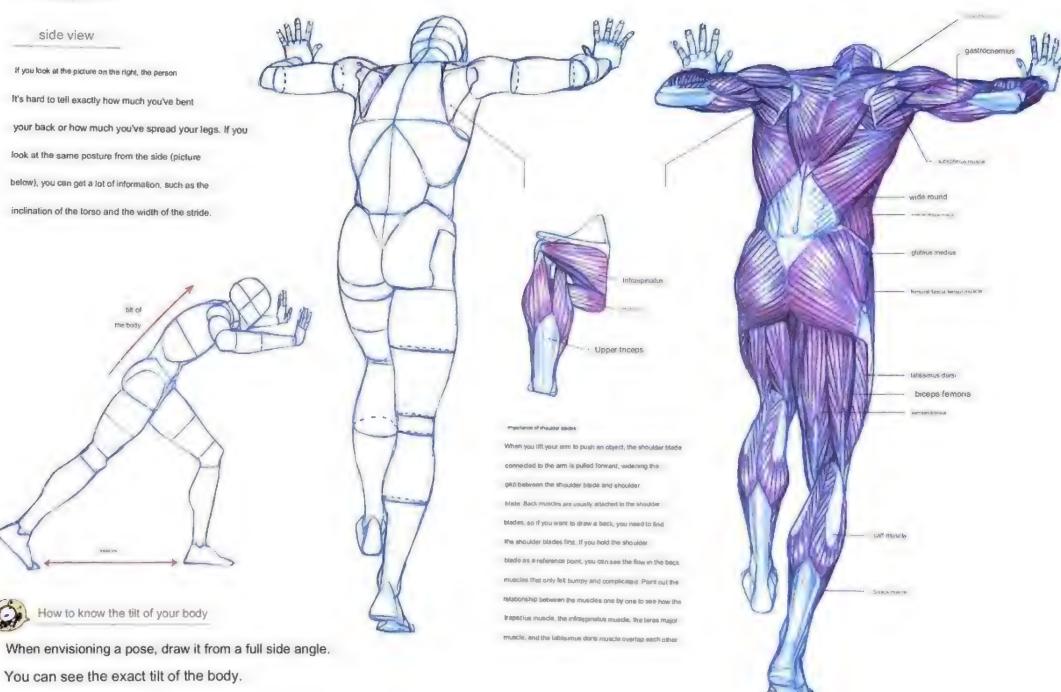


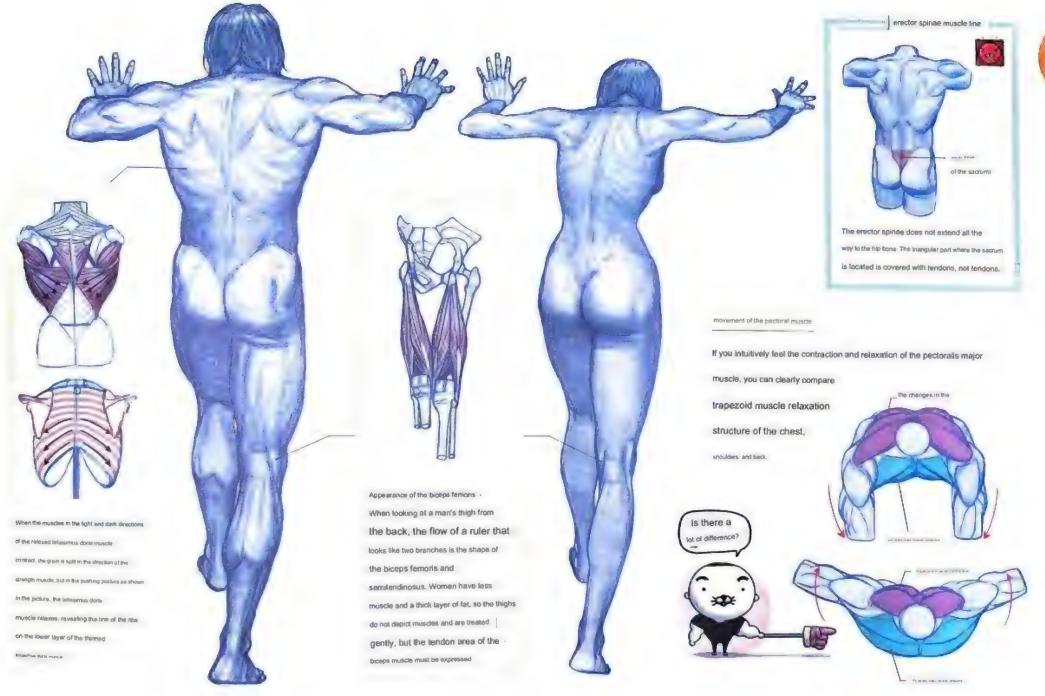




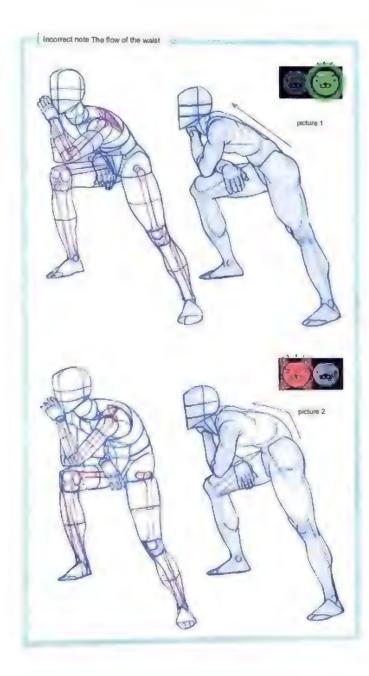


■ Pushing posture



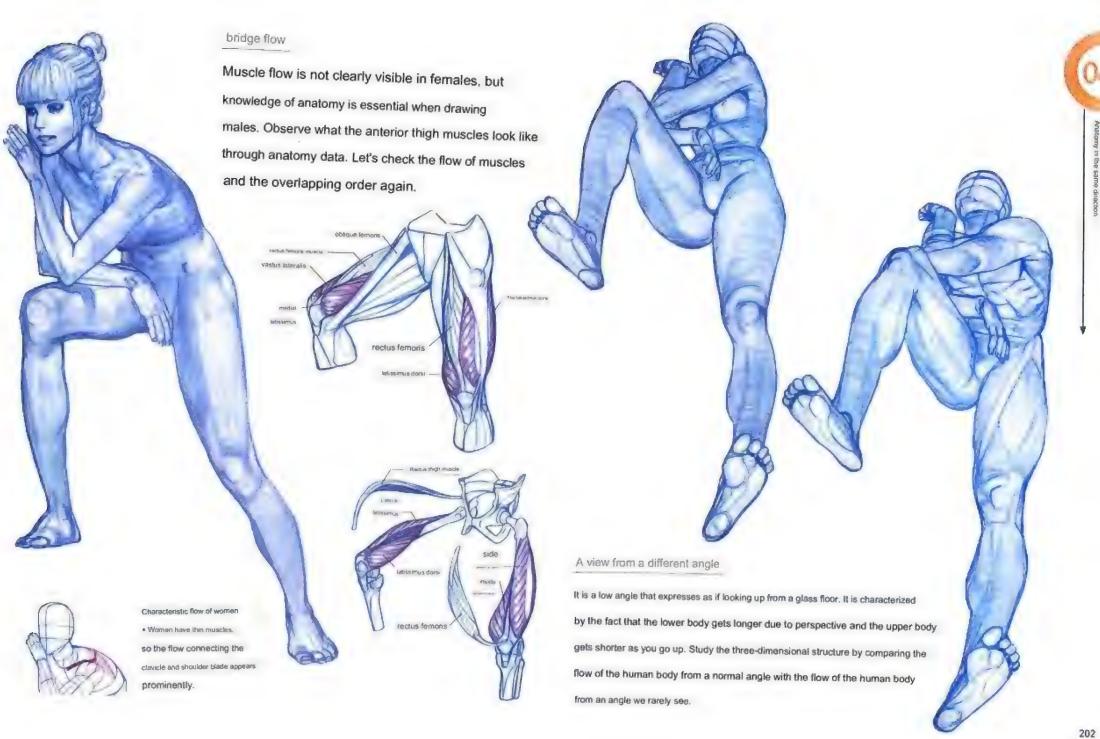


■ A posture with the weight of the upper body on one leg

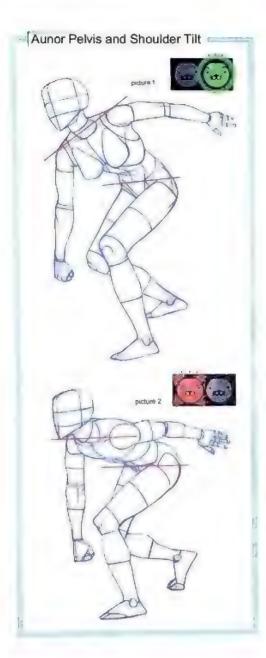


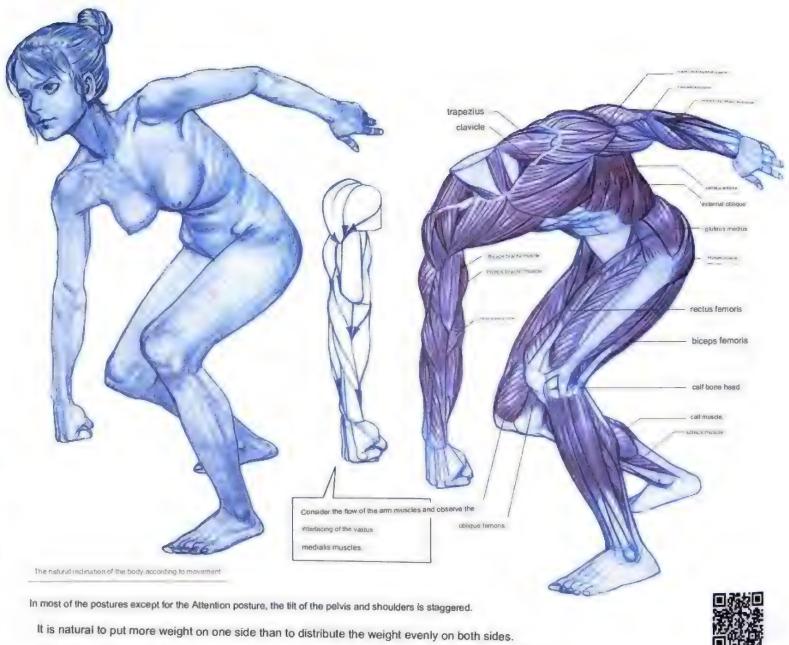


down. Since the left arm is lowered, the back is slightly visible, so you need to know the location of the shoulder blades to express the back muscles. Be sure to indicate the location of the shoulder blades from the drawing stage.



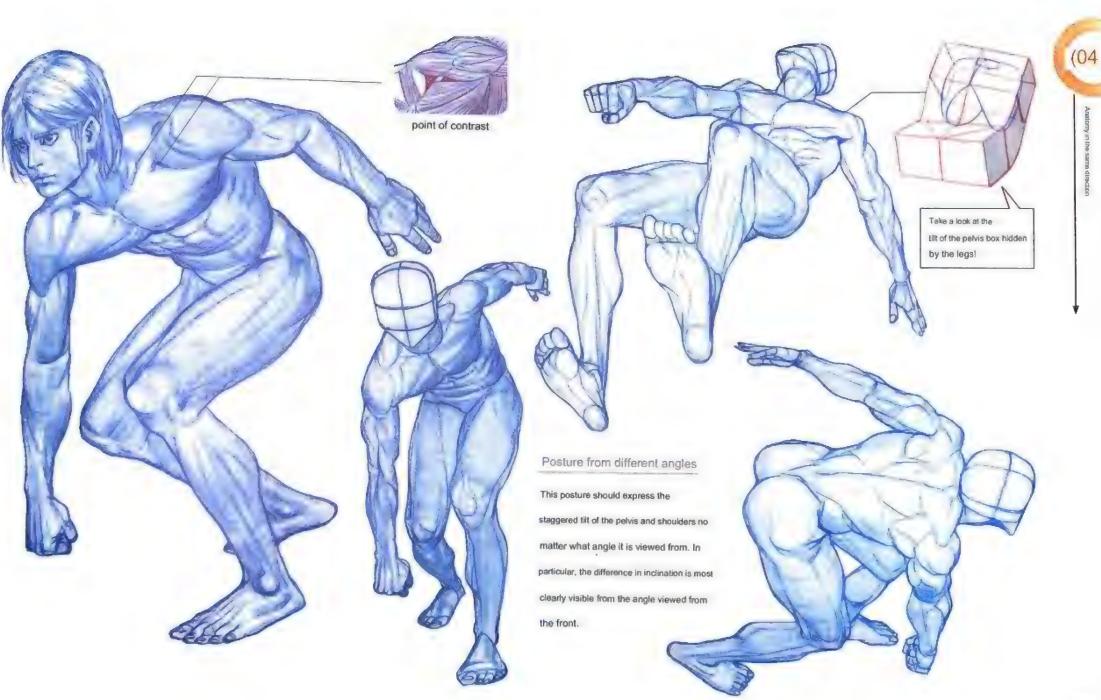
Position with one hand facing down





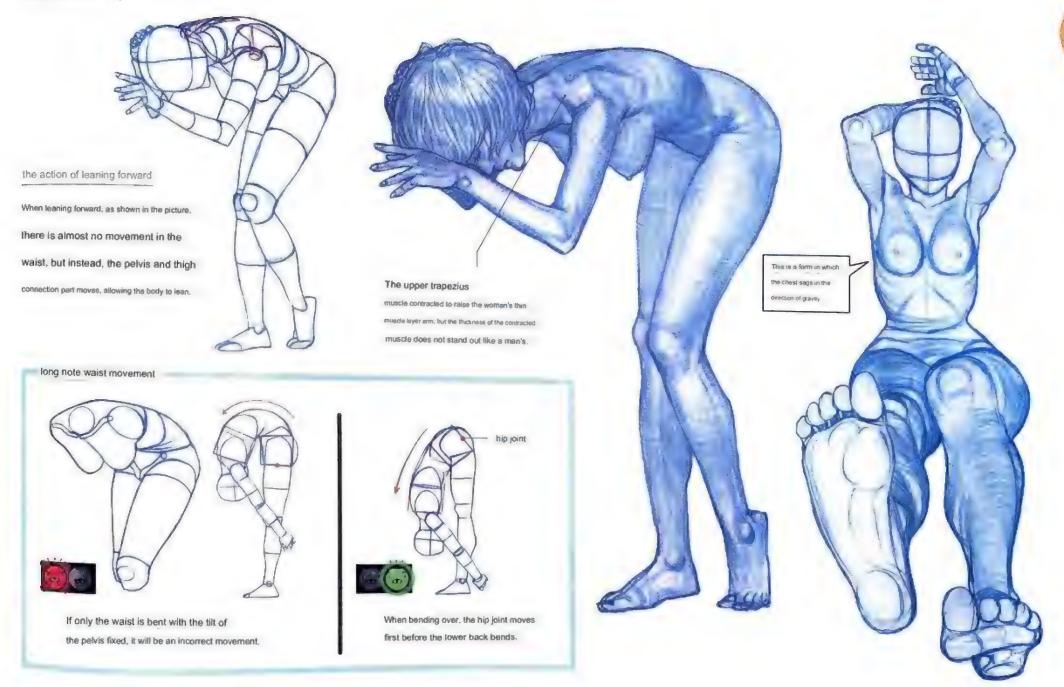
As shown in Figure 1 in the box on the left, imagine a rhythmic movement by staggering the tilt of the pelvis and shoulders. As shown in Figure

2, even if the center of gravity, proportion, and sense of mass are all right, if the inclination of the pelvis and shoulders is the same, the liveliness of the human body decreases.





Lower back posture



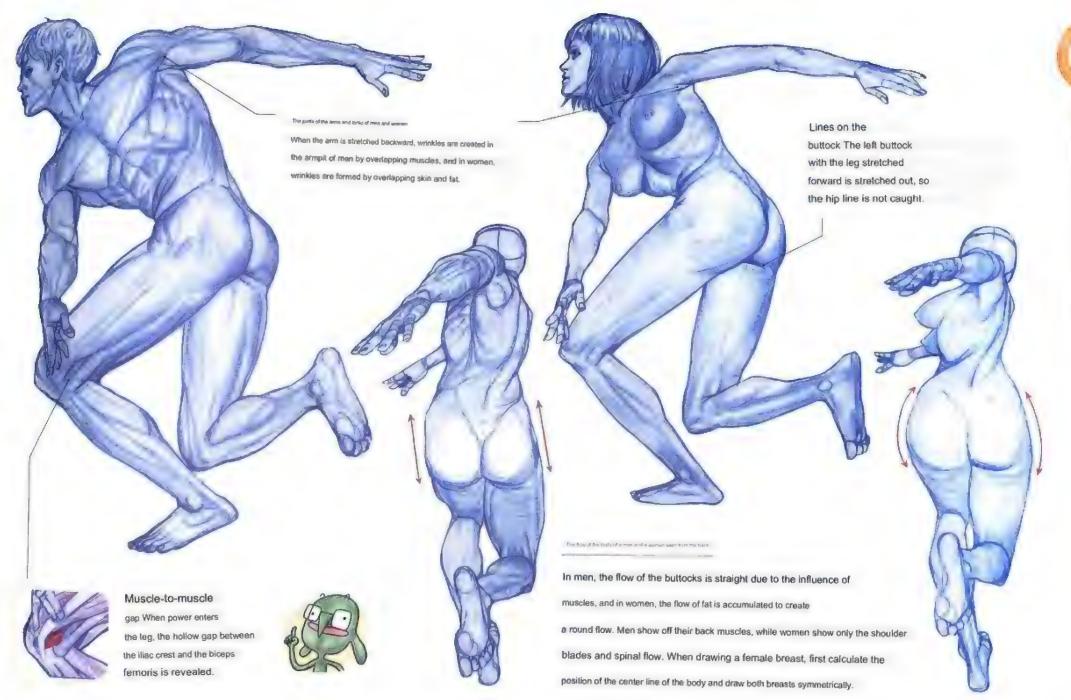
■ twisted posture





Biceps femoris and latissimus dorsi

Observe how much the biceps femoris is covered by the latissimus dorsi muscle when viewed from the side. Because the short branch of the biceps femoris pulls on the tendon, the tendon of the biceps femoris bends. Check out the bent tendon behind your family's knee right now!



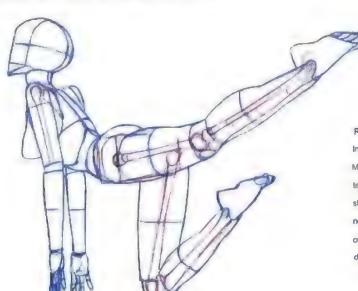
stretching posture

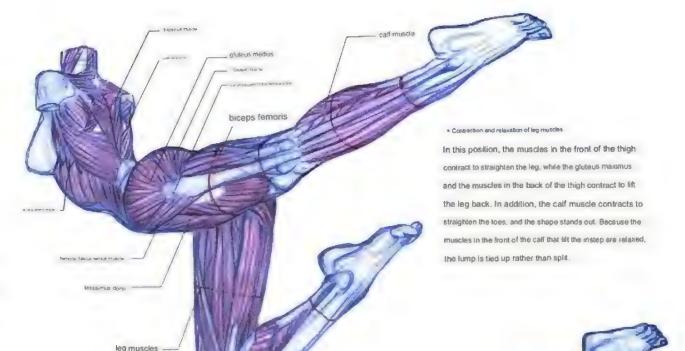


Know which muscles contract and relax

The weight of the body is supported by both hands and the right knee, and the left leg is stretched backward to alimulate the erector spinae and biceps femoris.

This movement, which is often performed in yoga or aerobics, increases the elasticity of the buttocks by strengthening the spine and gluteus maximus. It is a posture that combines the flexibility of the arched flow with the tension of the powerfully extended legs.





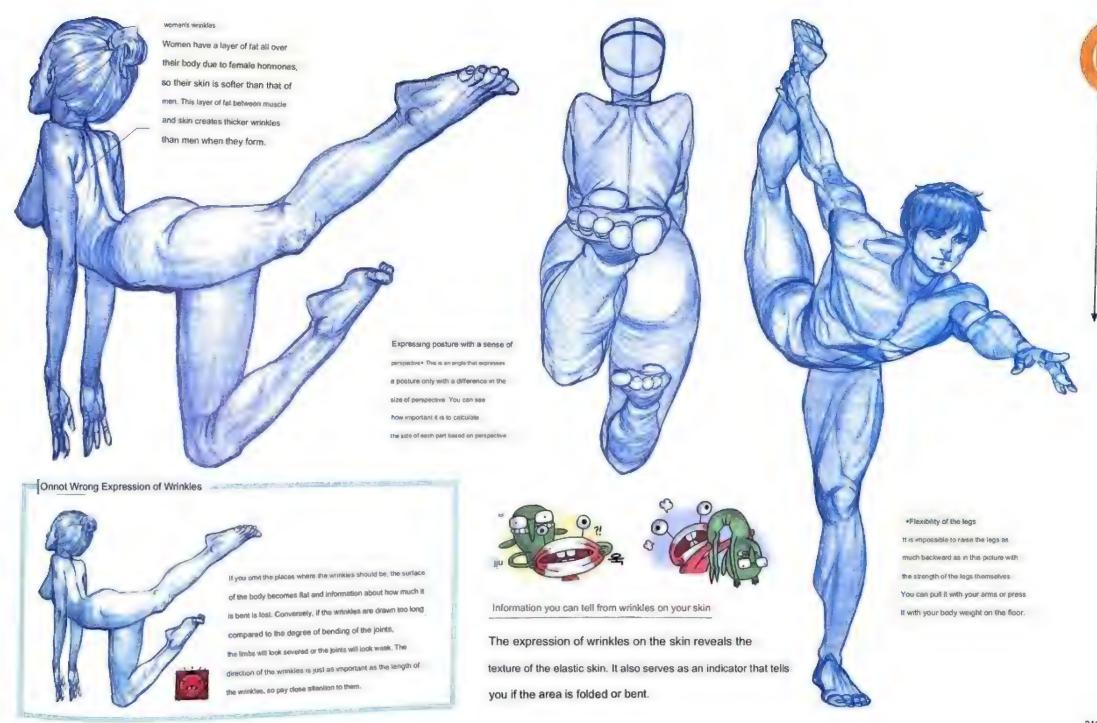
Realistic muscle description»

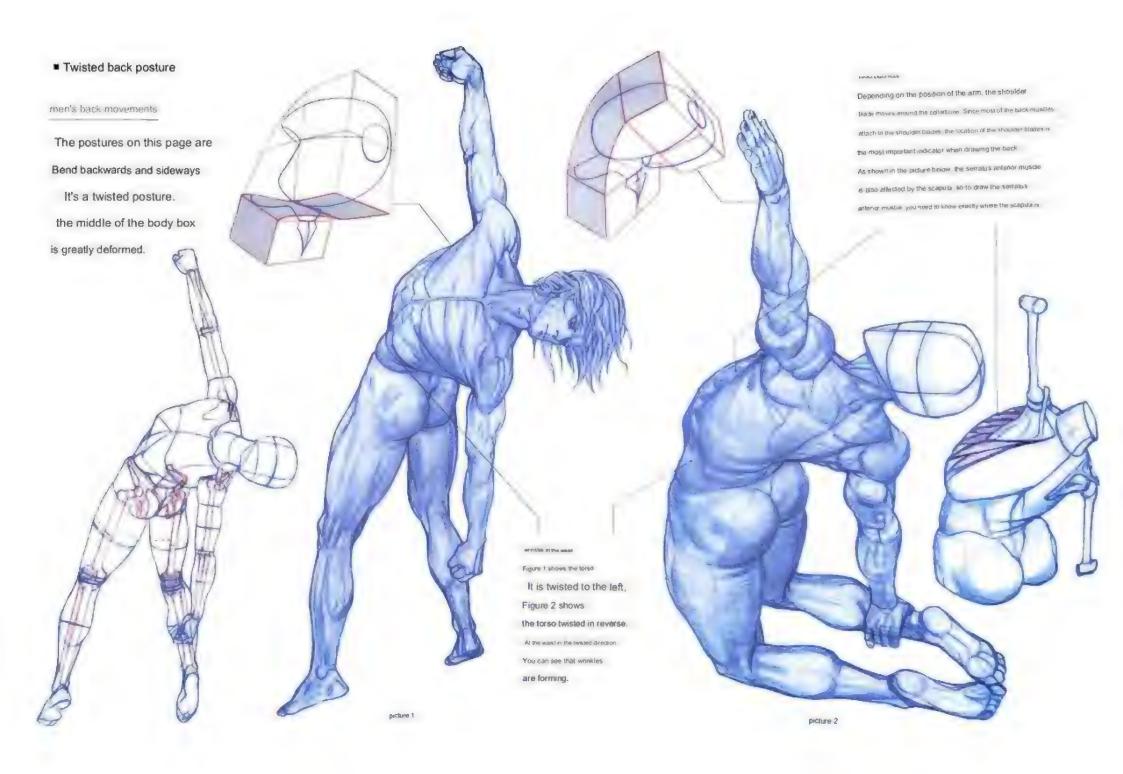
In real life, all the muscles seen in anatomy data are not visible.

Muscles in the areas where strength is applied should be drawn with texture, and muscles in areas where strength is not applied should be drawn in a large lump rather than split. Therefore, no matter whall pose you draw, you need to know which parts of the pose are strong and which ones are not. Of course, this does not apply to characters with less muscle or thicker layers of fat.

labsumus dorsi

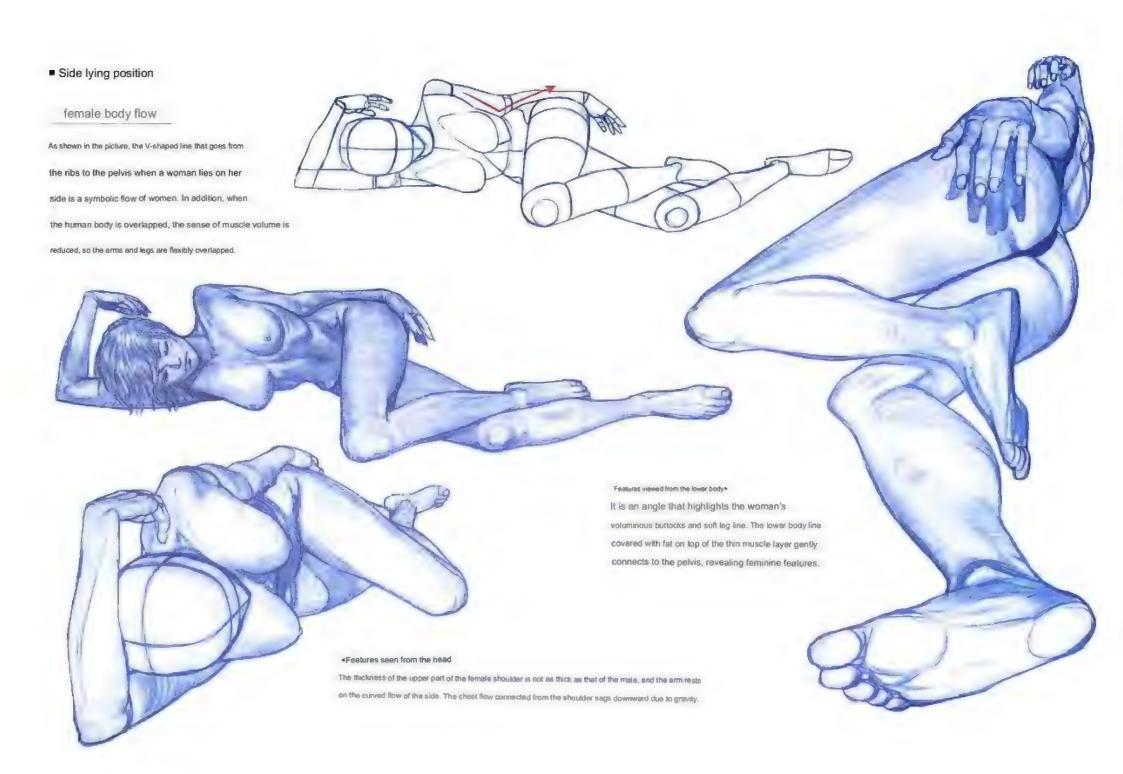




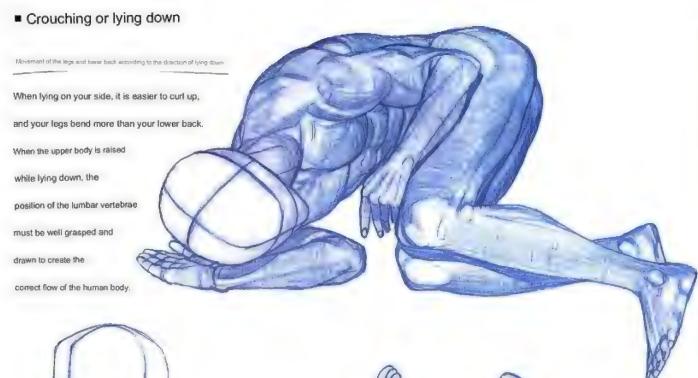


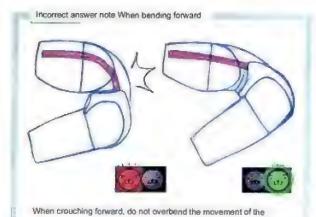
■ Women's waist movement









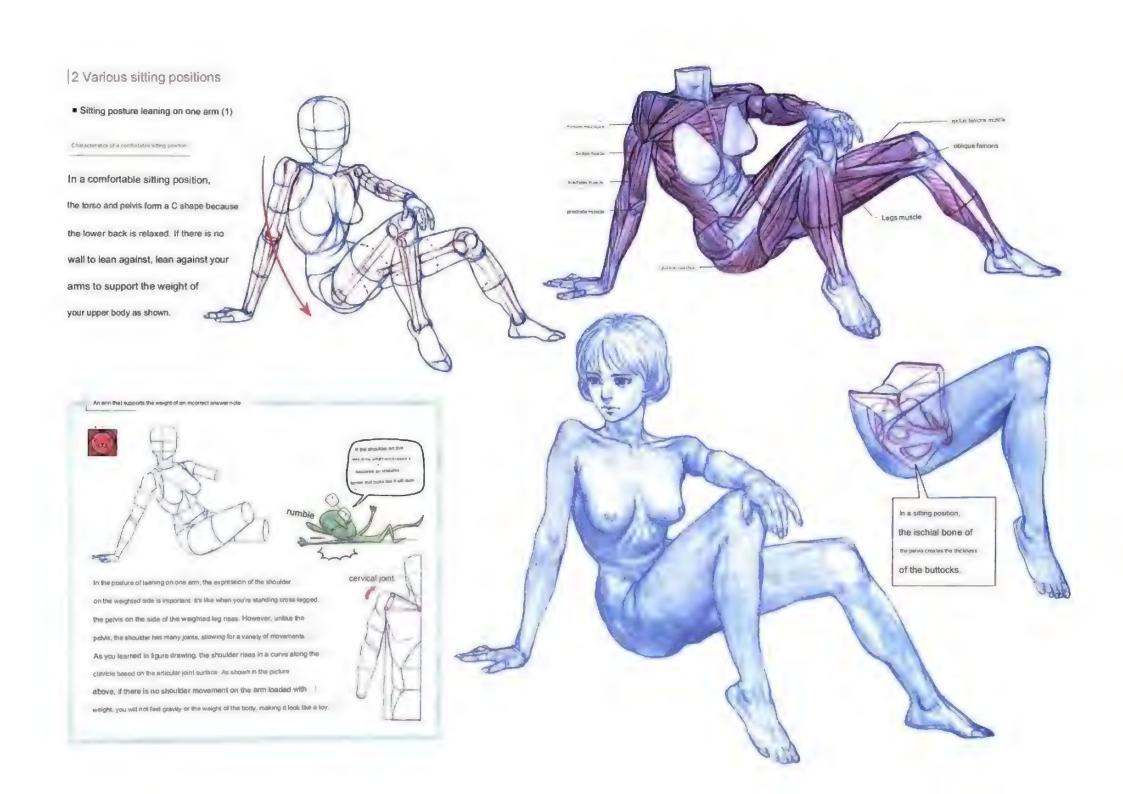


walst as shown in the incorrect answer picture. It is an angle beyond

the range of motion of the spine.

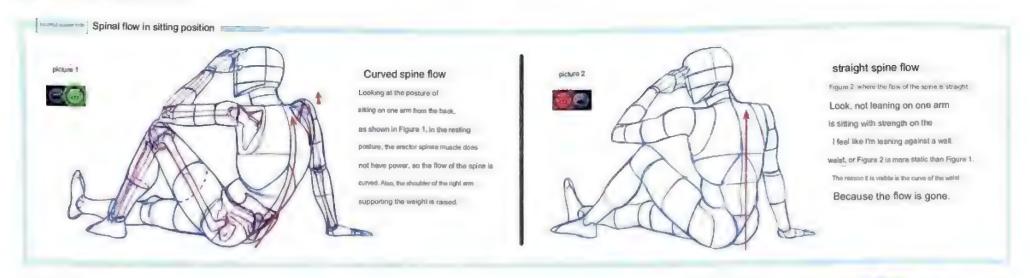
Women have a more prominent antenor liac spine than men

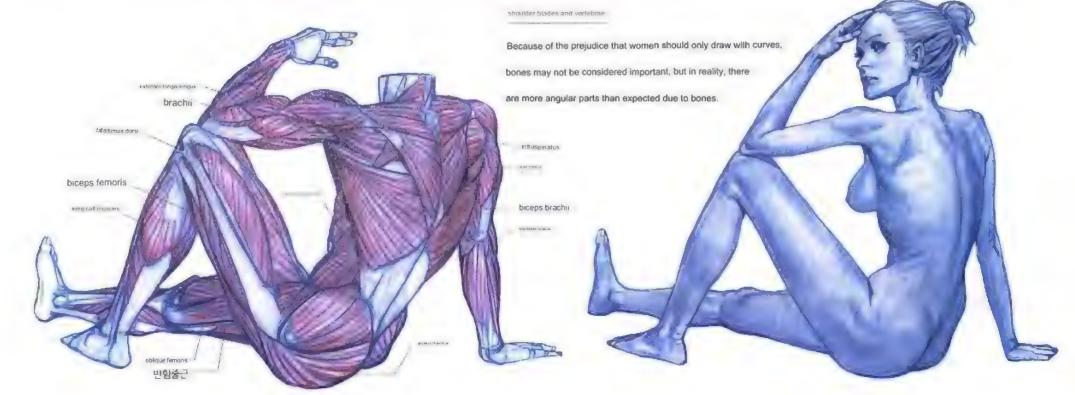
Since the welfat recover around the lumber vertebree, you need to know exactly where the spine is locared and where it bends. In the case of the picture with the incorrect answer, the furniber vertebree were not bent, but the part where the lumber vertebree and sacrum were connected moved. The backbone should be bent as shown in the picture. Depending on how you understand the movement of the lumber spine, the sizer of the body changes.



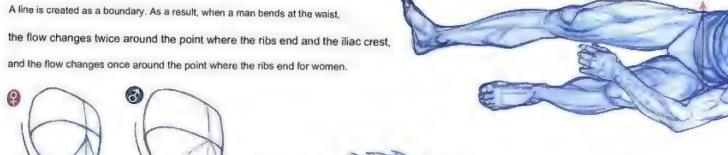


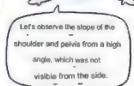
■ Sitting posture leaning on one arm (2)

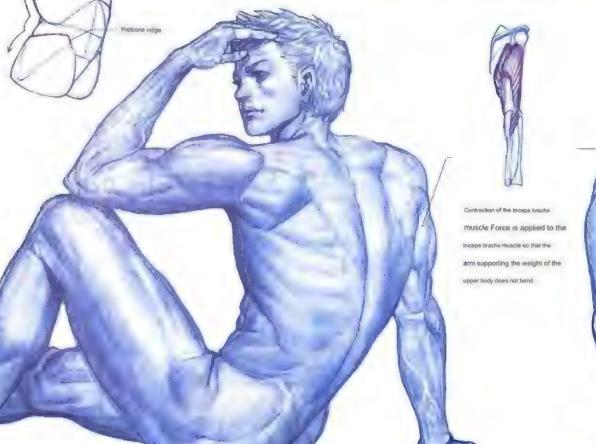




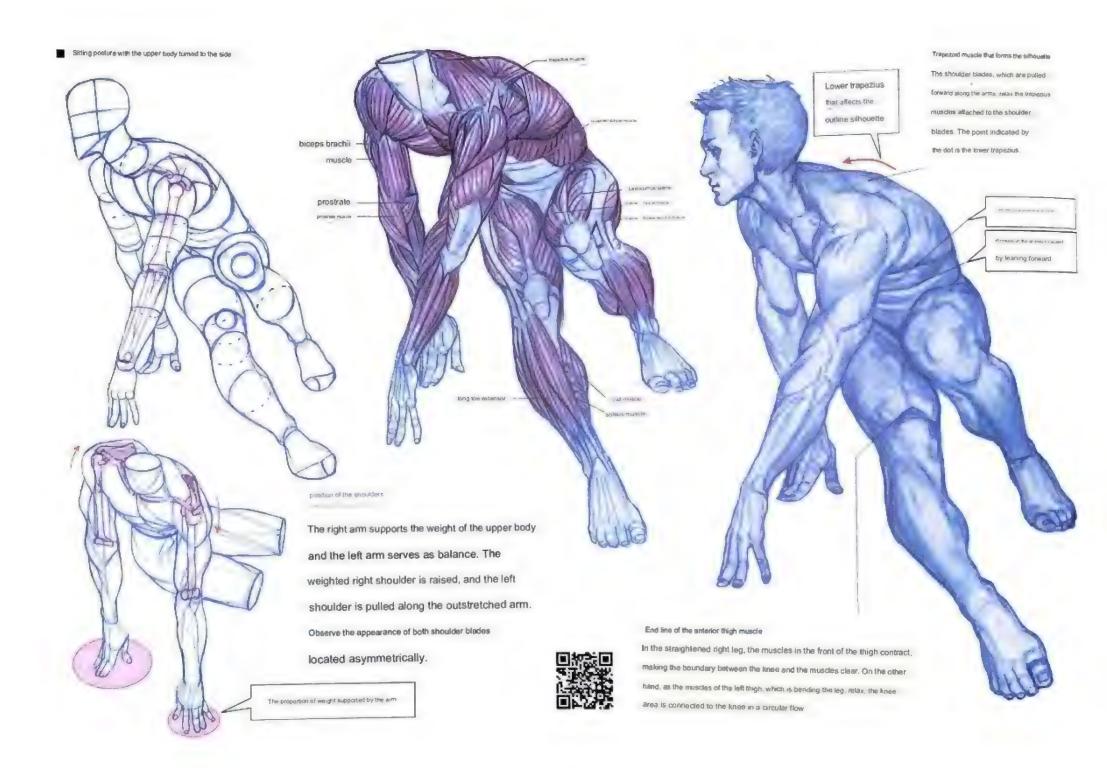
Unlike women, men have hip ridges on their waists.

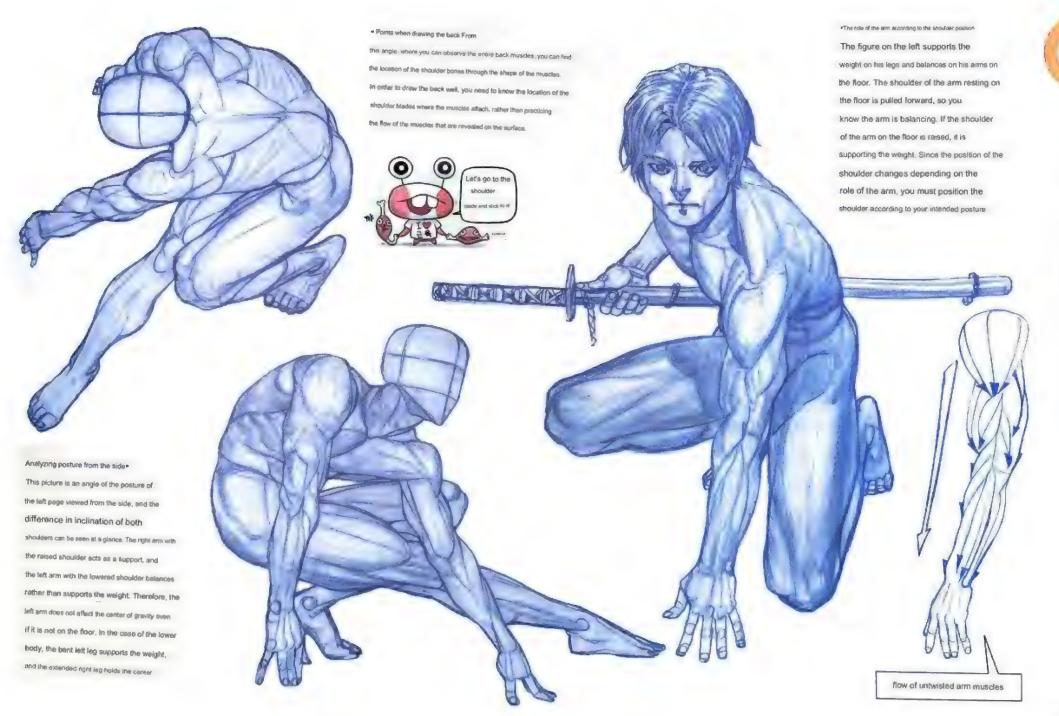












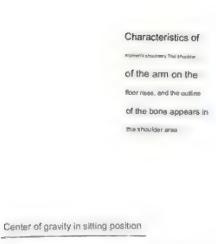




Direction of the lateral thigh line When the leg a bent the

line of the thigh is directed toward the

head of the calf bene



When you sit on your butt, it is relatively easier to balance your center of gravity because the area in contact with the floor is wider than when you are standing on your feet. As shown in the picture on the right, if you place your arm on the floor, the shoulder on the side you. are carrying the weight on should go up. Observe the position

of the shoulders through the pictures on this page.





person with no flesh on the buttocks hurts when he sits on his lap is because of this 'scacular suborcia'l

The reason why a skinny Characteristics of women's sitting posture Women have a lot of fat in their buttocks, so it spreads to the side when they sit down.

Female hormones

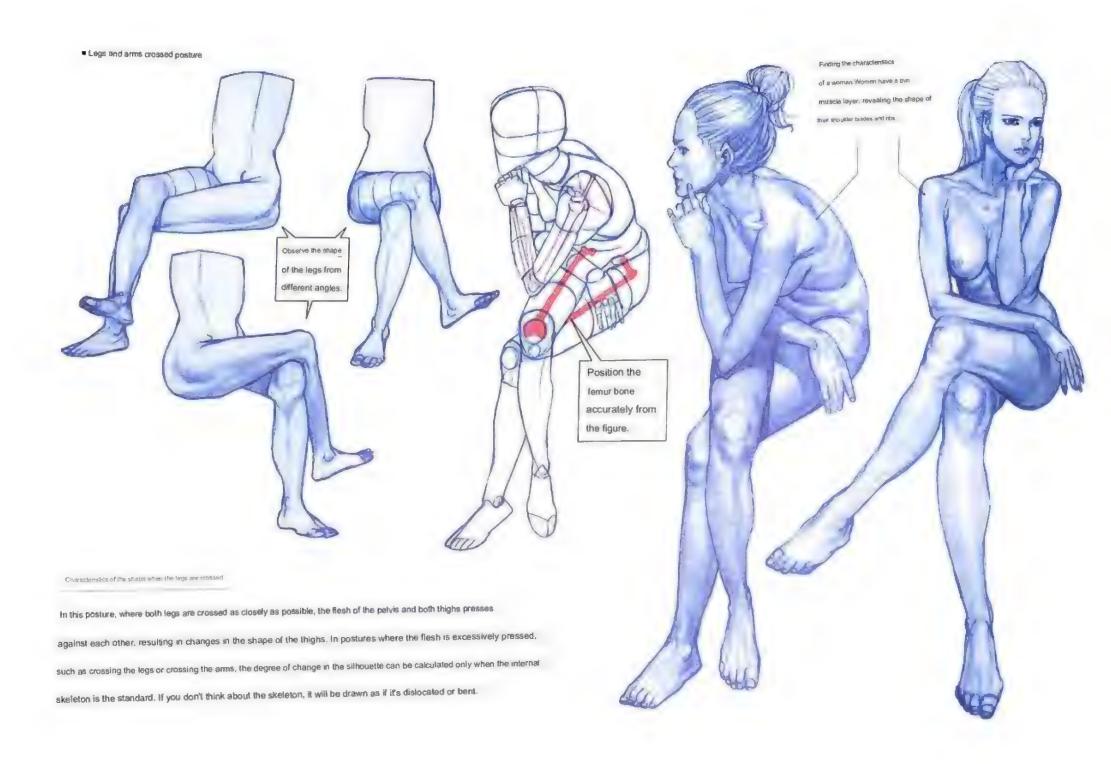
form a thin 을

a woman's forearm.

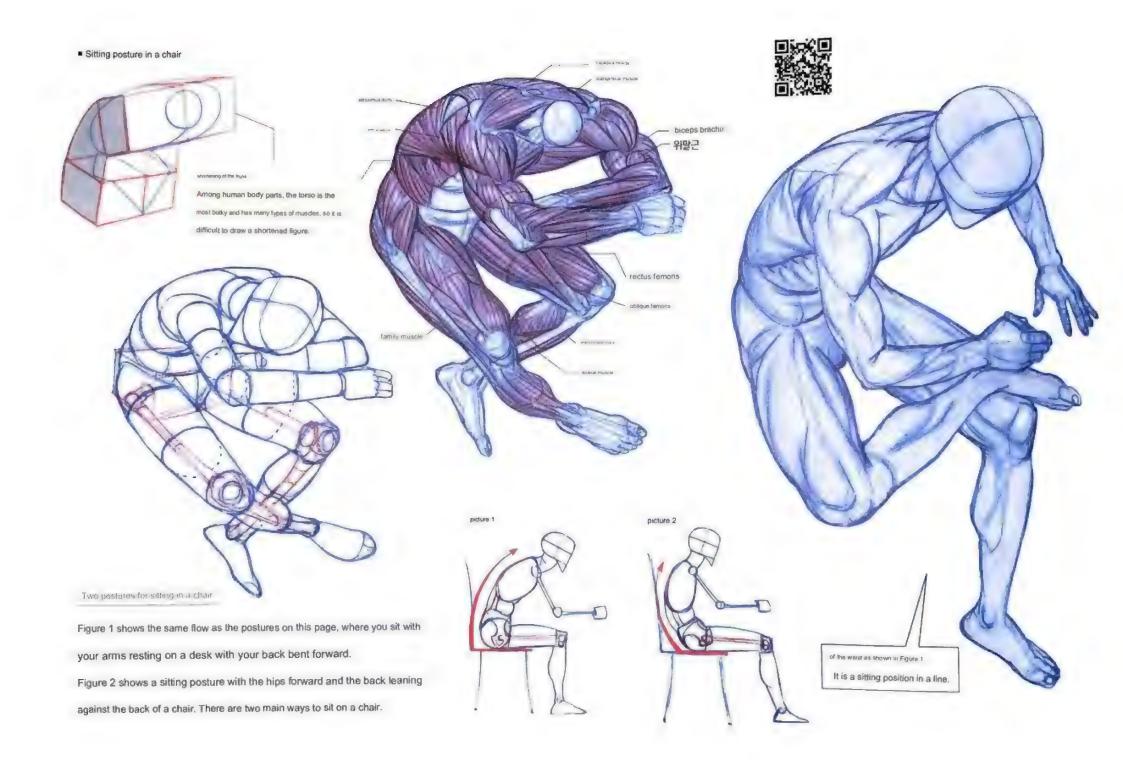
layer of fat all over the body and make the muscles soft. It is also the reason why the flesh is formed on the back of

in the flesh behind the forearm

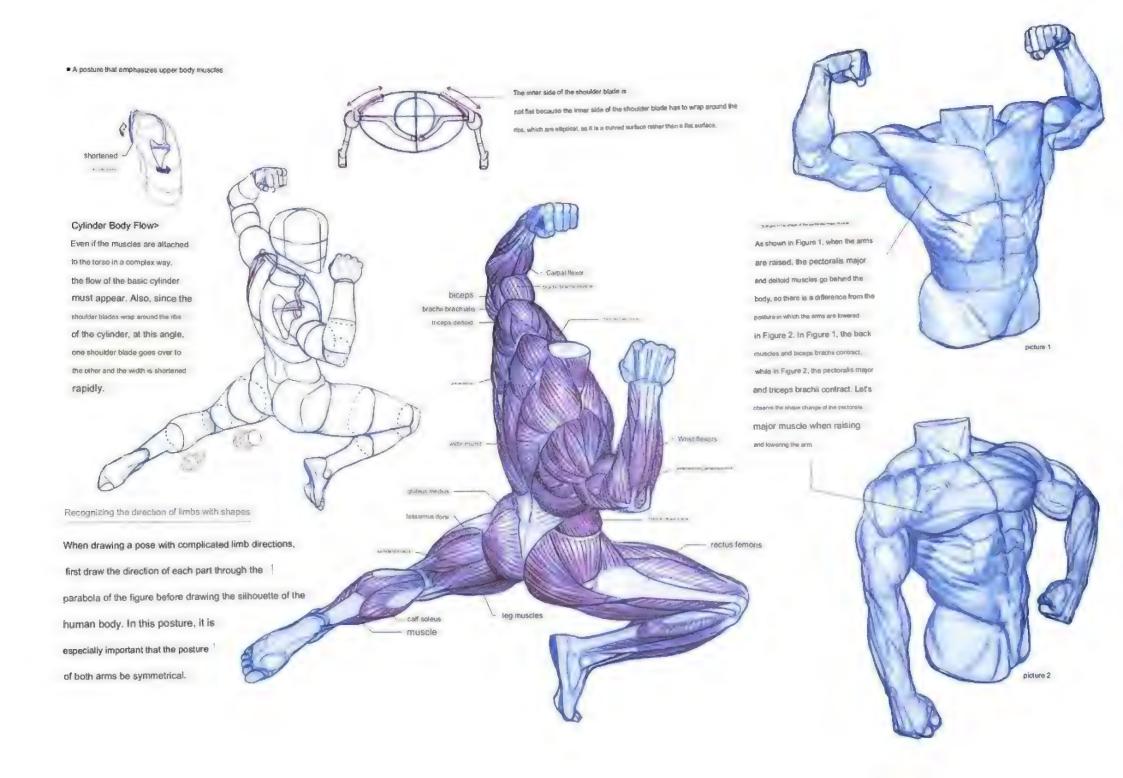
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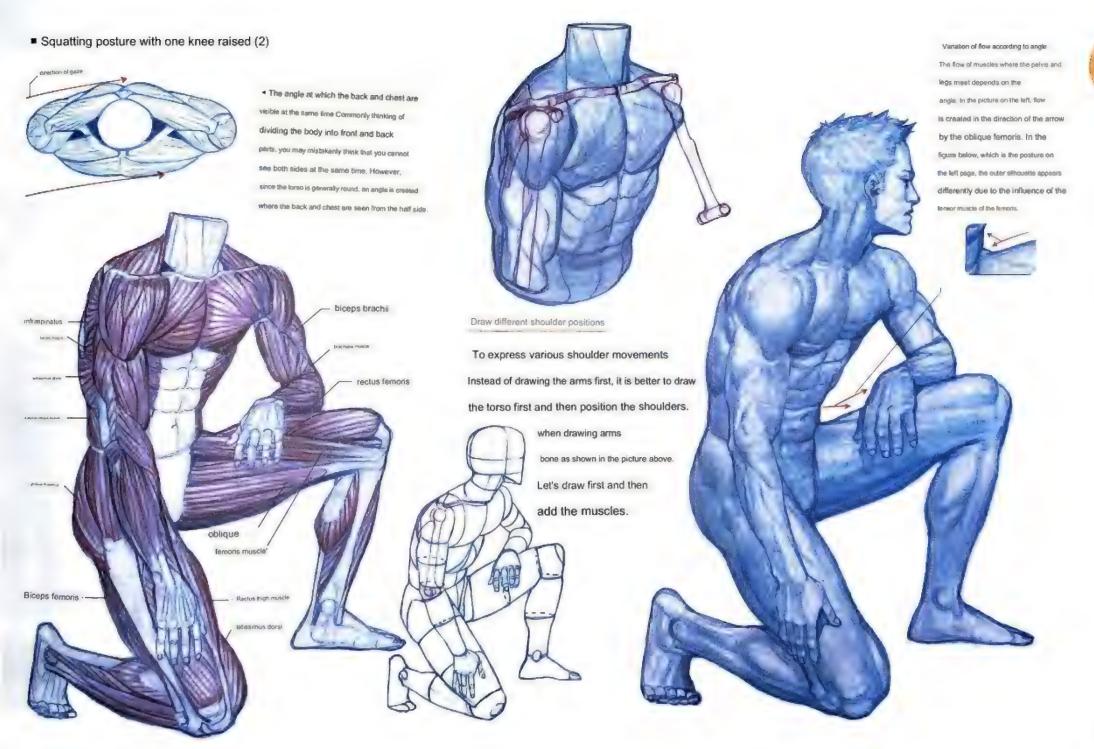












■ Sit on tiptoe (1)

Figure 2

difficult center of gravity

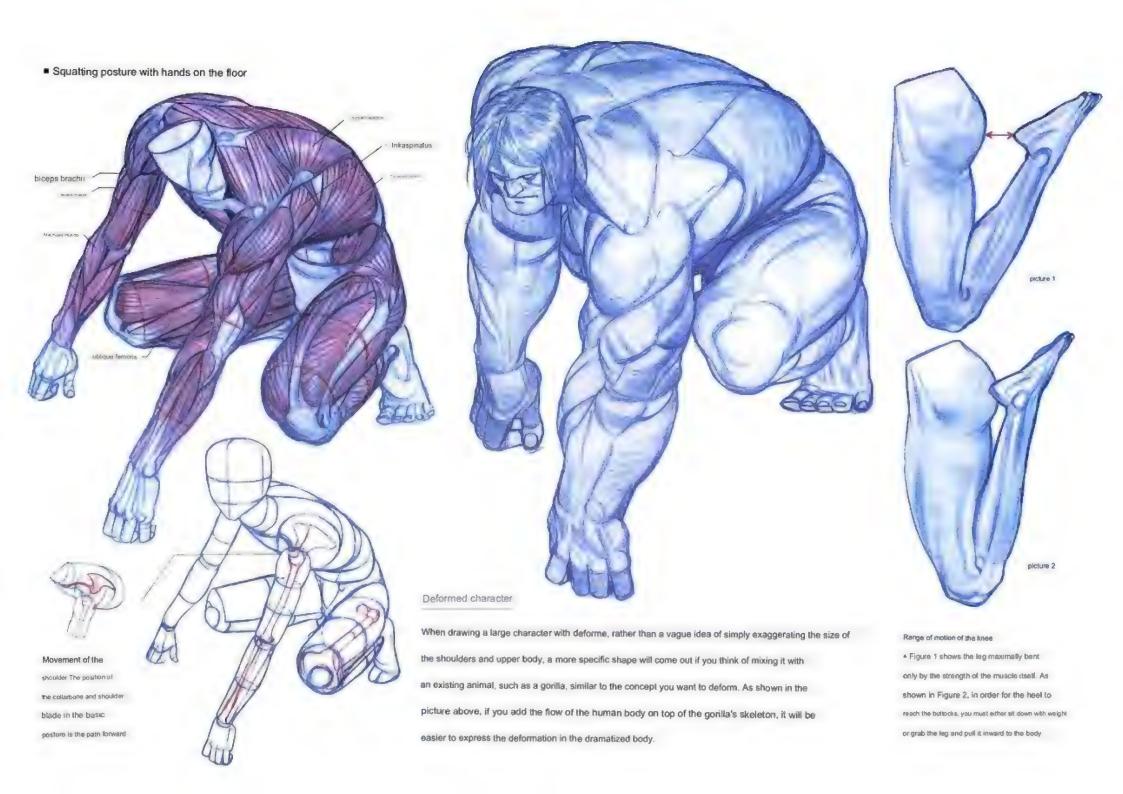


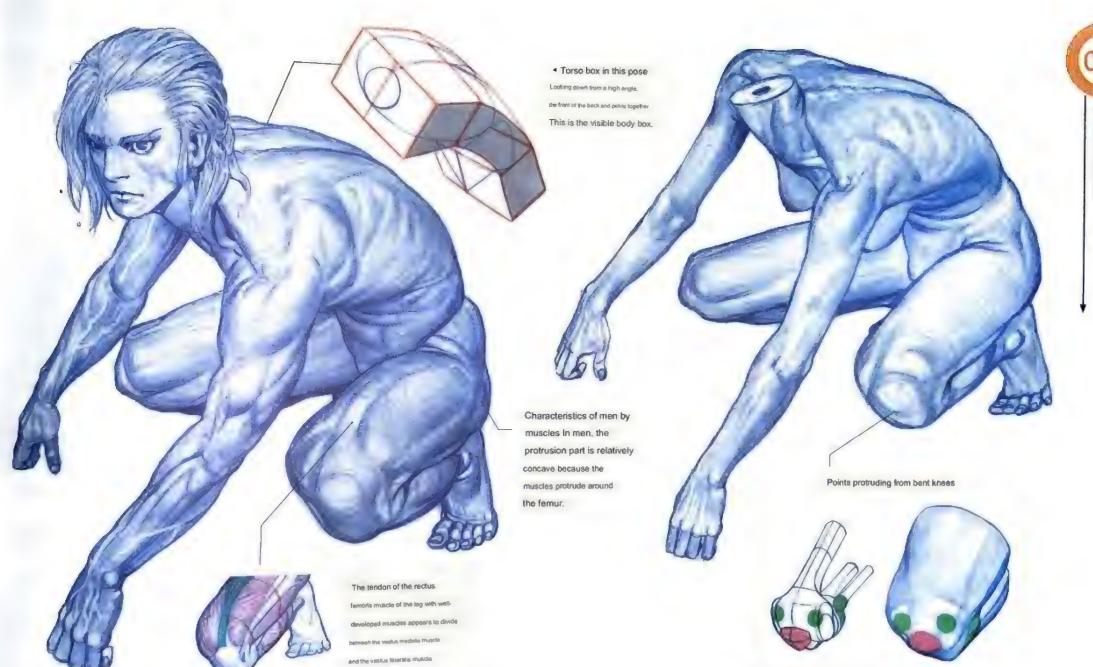
In the posture of squatting on tiptoe, bending over rather

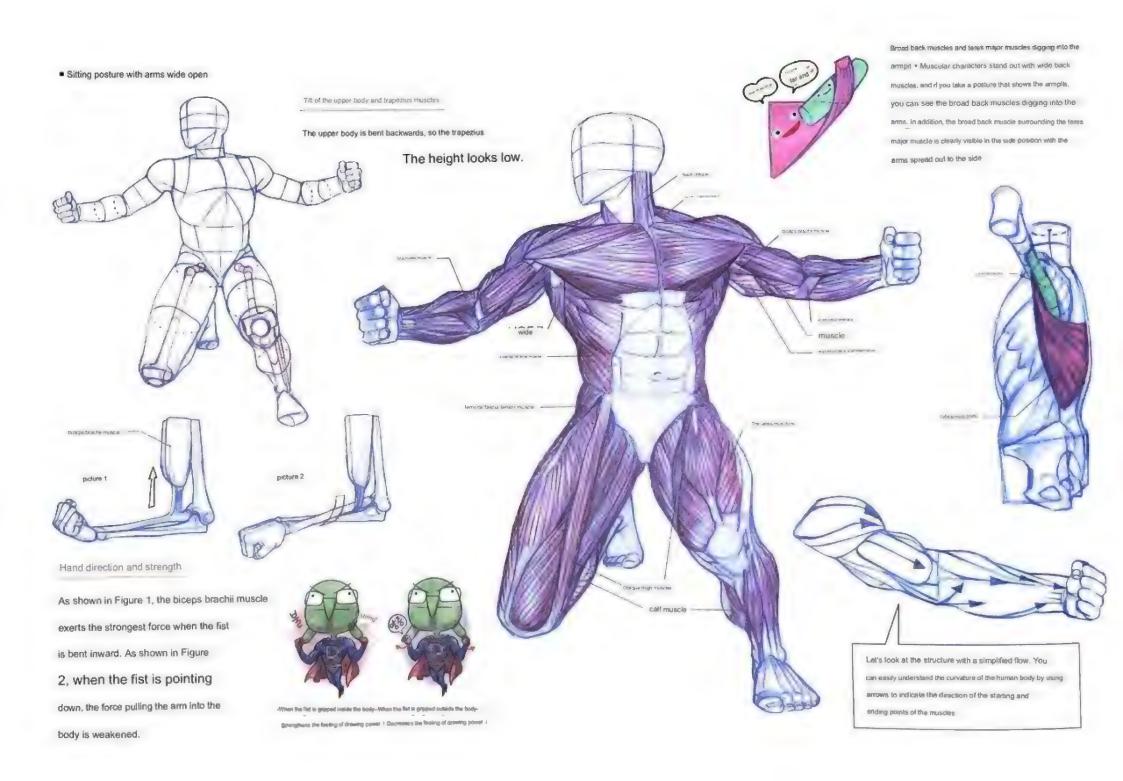
than erecting the upper body creates a stable center of gravity. Guys, sit on tiptoe. Are you having trouble As shown in the picture below, when you bend your keeping your balance? A posture that is difficult upper body, you will naturally place your arms to center in real life is also difficult to on your legs, slightly raising your shoulders. balance in the picture. brachii longus longus cams rectus femons. iliac crest eastus media soles of the two squatting positions The squatting posture is divided into two postures, such as lying down on the thighs and standing on tiptoe as in No. 1, or raising the thighs and attaching the entire sole to the floor as in No. 2. Posture 2 is a difficult pose for men to perform. Unlike women whose lower bodies are heavier than their upper bodies, men's upper bodies are heavier, so the center of gravity is leaned backwards, making it easier to fall. Figure 2 is a posture in

which the center of gravity is incorrect due to the combination of the tip of the toe of number 1 and the slope of the thigh of number 2.

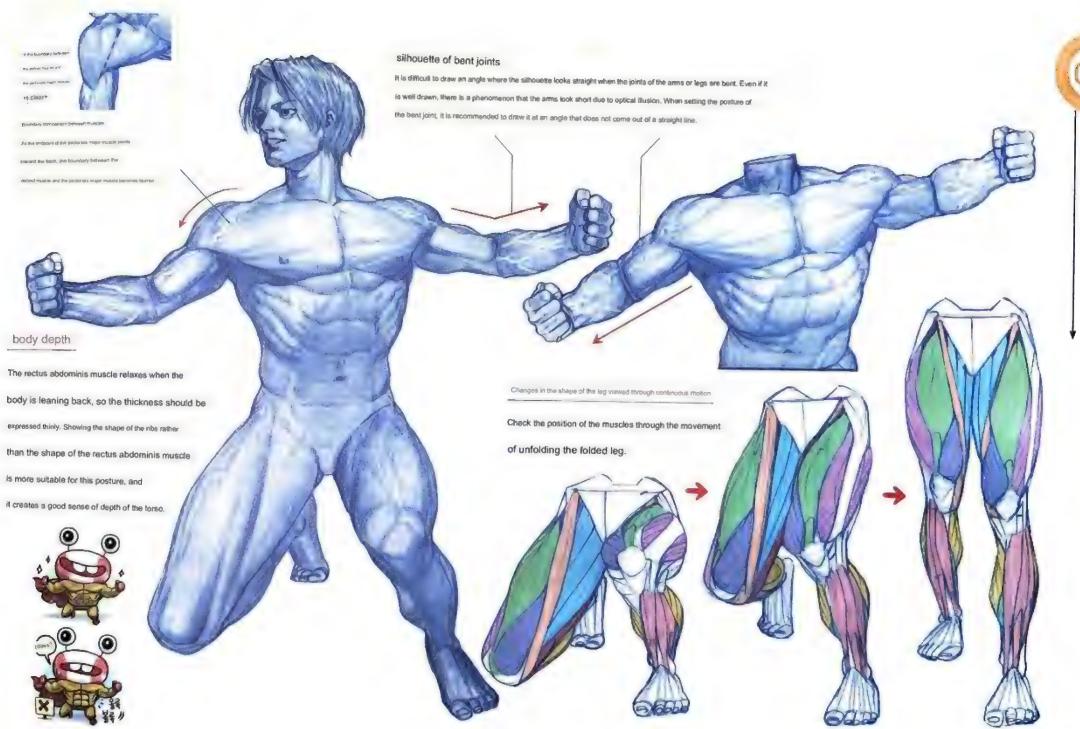


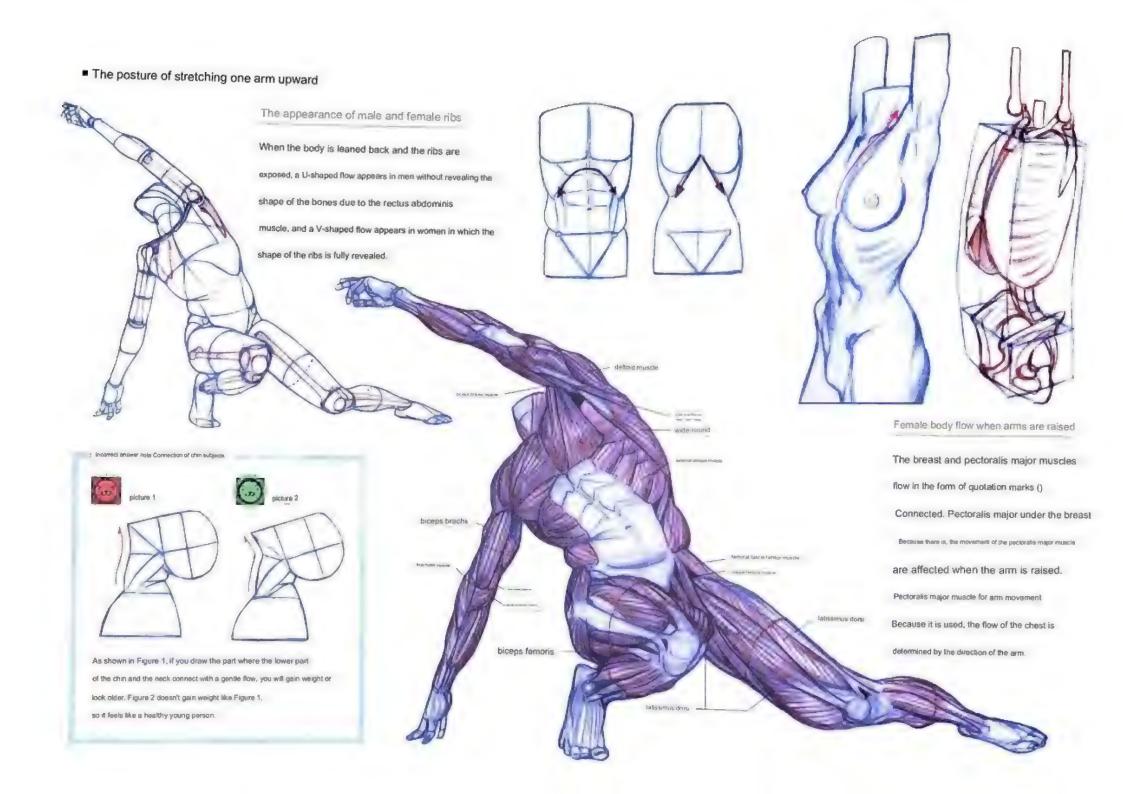






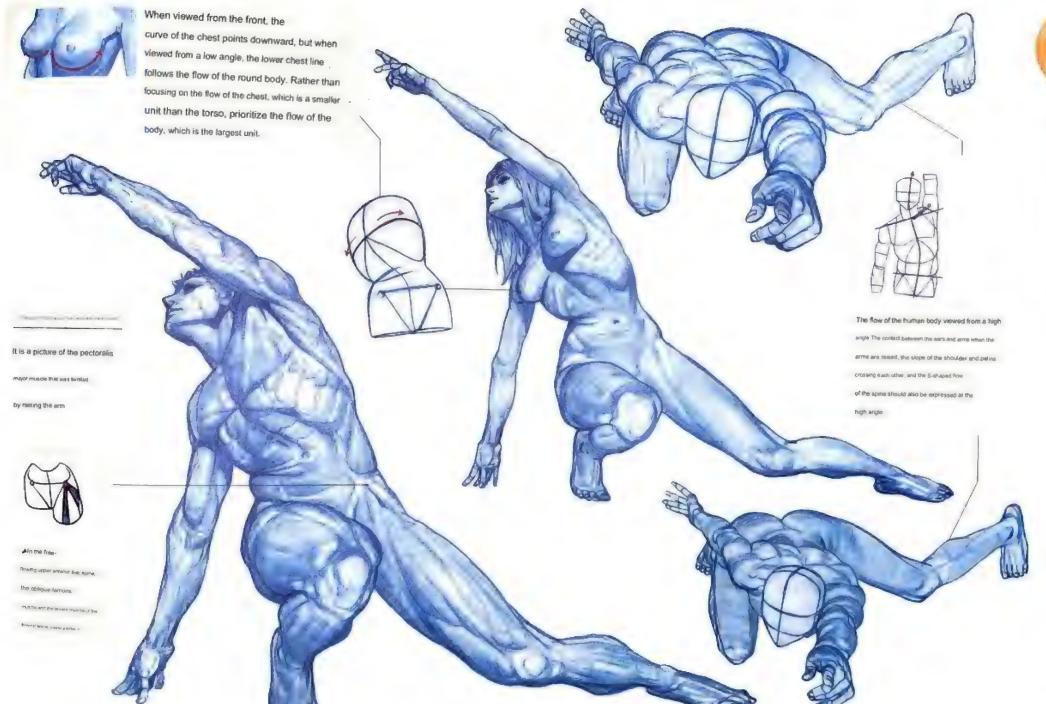


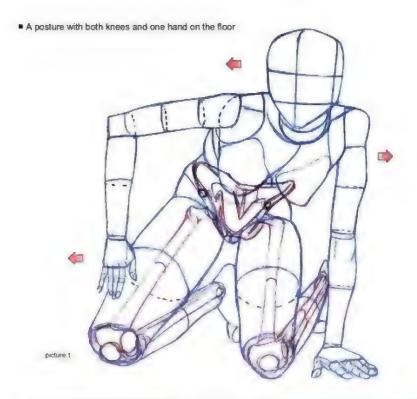


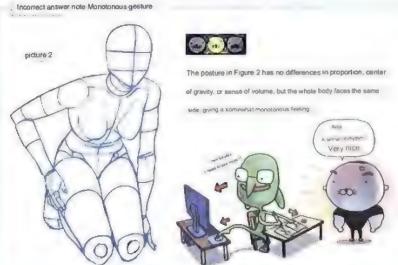


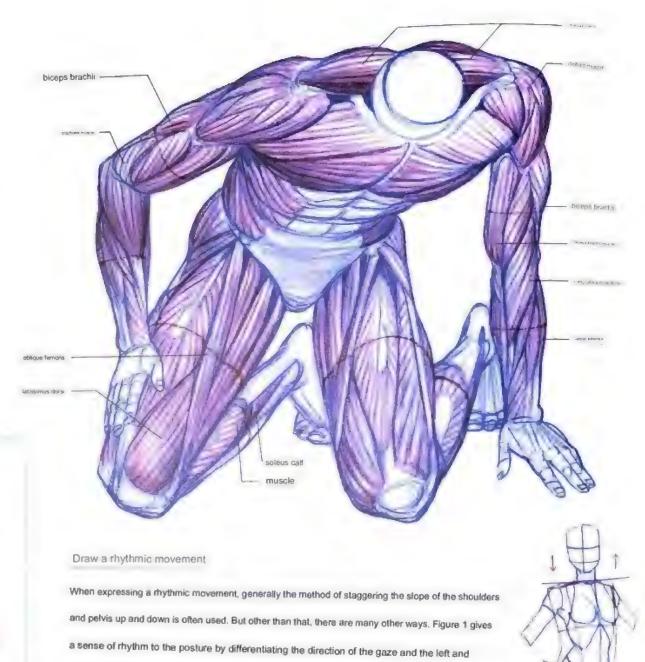


alterny in the same directors









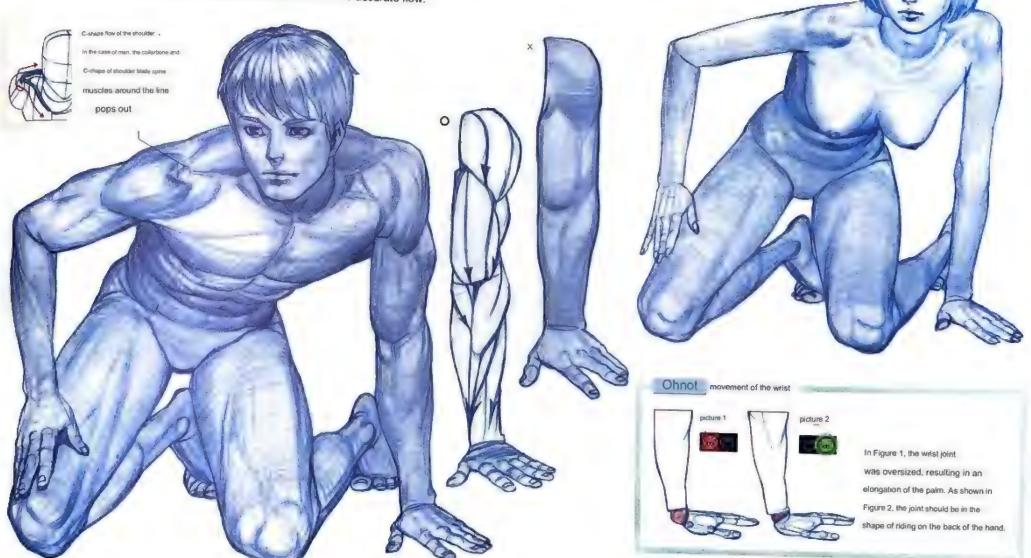
right directions of the upper and lower body in a state where the inclination of the shoulder and

pelvis is the same up and down.



The muscles of the arms are intertwined like a pretzel to create a bumpy flow. However, the level of this 'bumpy' is very ambiguous.

Incorrect emphasis on the muscles can result in a disastrous drawing, as if a broken arm bone. Conversely, if you omit the flexion, the arm becomes a single cylinder as if there were no joints. After learning the flow of the human body through croquis, let's practice in the order of studying anatomy to find a more accurate flow.



Women's various sitting postures

S-shaped flow of female ribs

Women have thinner muscles, so the shape of the ribs forms the contours of the body. Especially when leaning back or inhaling the upper body, the straight line of the ribs is clearly visible.



superior anterior (figs spine)

The superior anterior illac spine is a representative point on the outside of the female pelvis. Unlike men, the ridge of the hipbone is buried due to the fat accumulated in the pelvis, but the spine of the upper anterior hipbone stands out.

If you connect both upper anterior illiac spines, you can find out the tilt of the pelvis.





Anatomy in the same direction

Women with a more bent femoral neck angle than men can sit in a variety of leg postures because the range of motion of the femur is wider. Because of these characteristics, the poses on this page are the trademarks of women. Although there are very few men who can do this position, most women can do it.

sitting posture peculiar to women

Contrast in the sternum area Contrast

in the front part of the chest caused by the meeting of the stemum and ribs appears in thin women

It is caused by the contour of the bone, not by

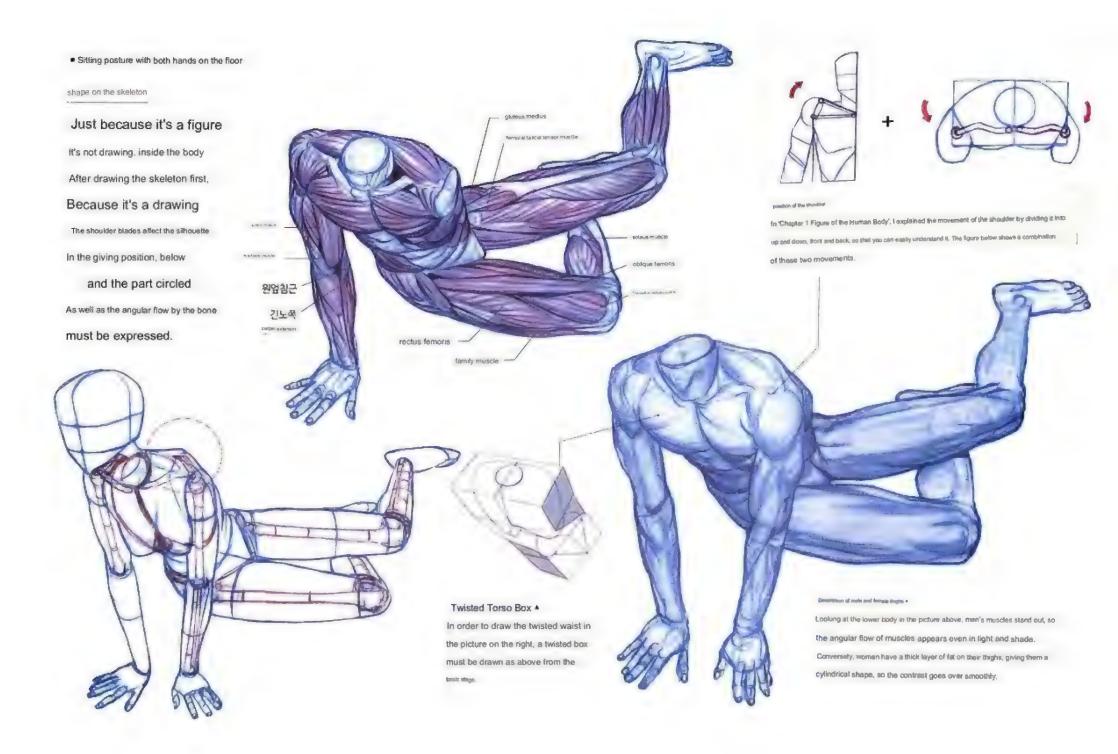
the influence of the pectoralis major muscle.

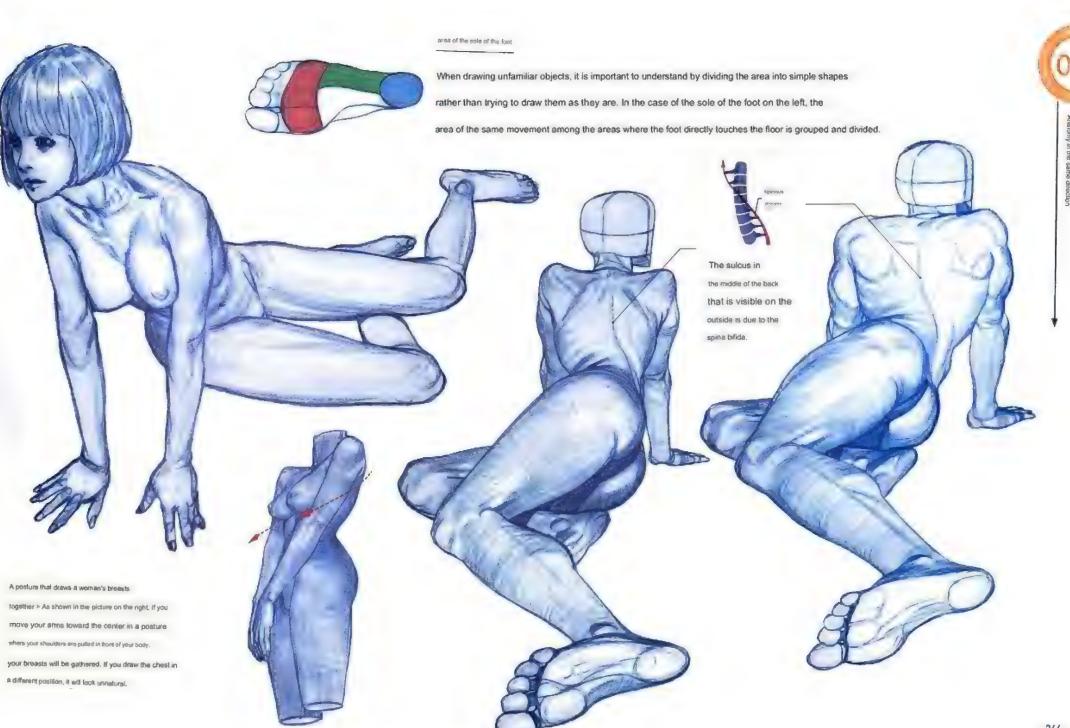
female shoulder stupe

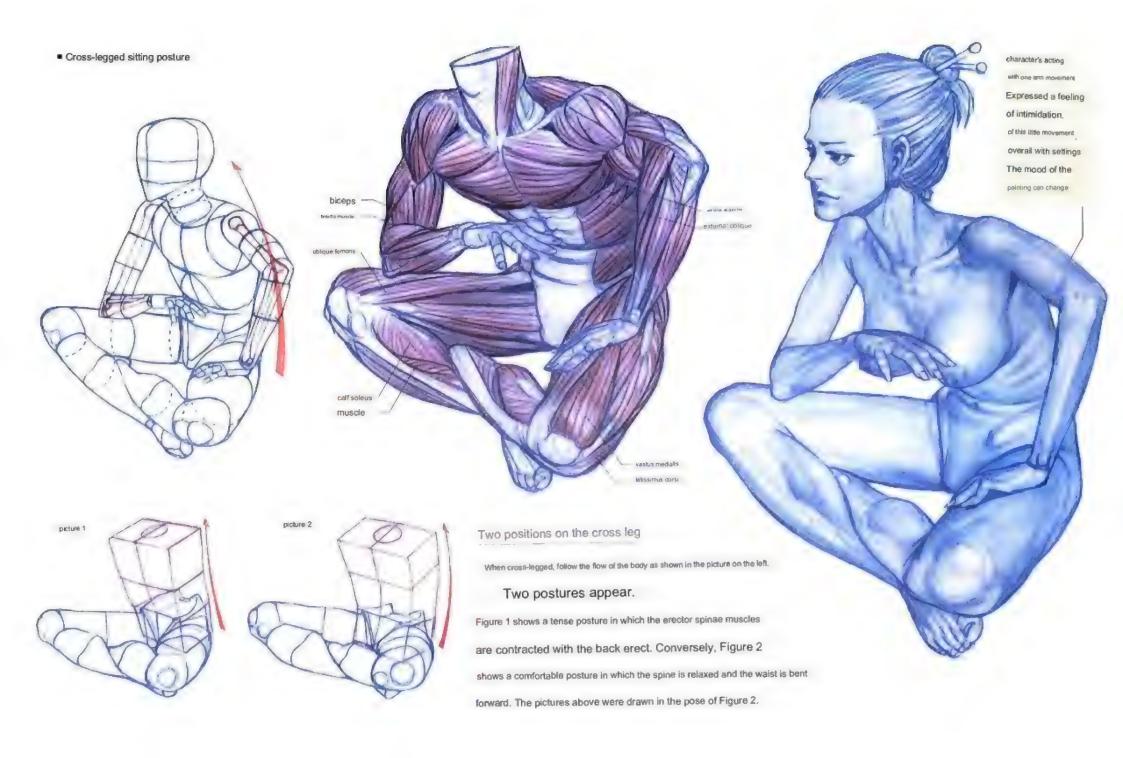
Women here thin shoulder muscles, so the need of the humanus and the bank process shape the shoulder.

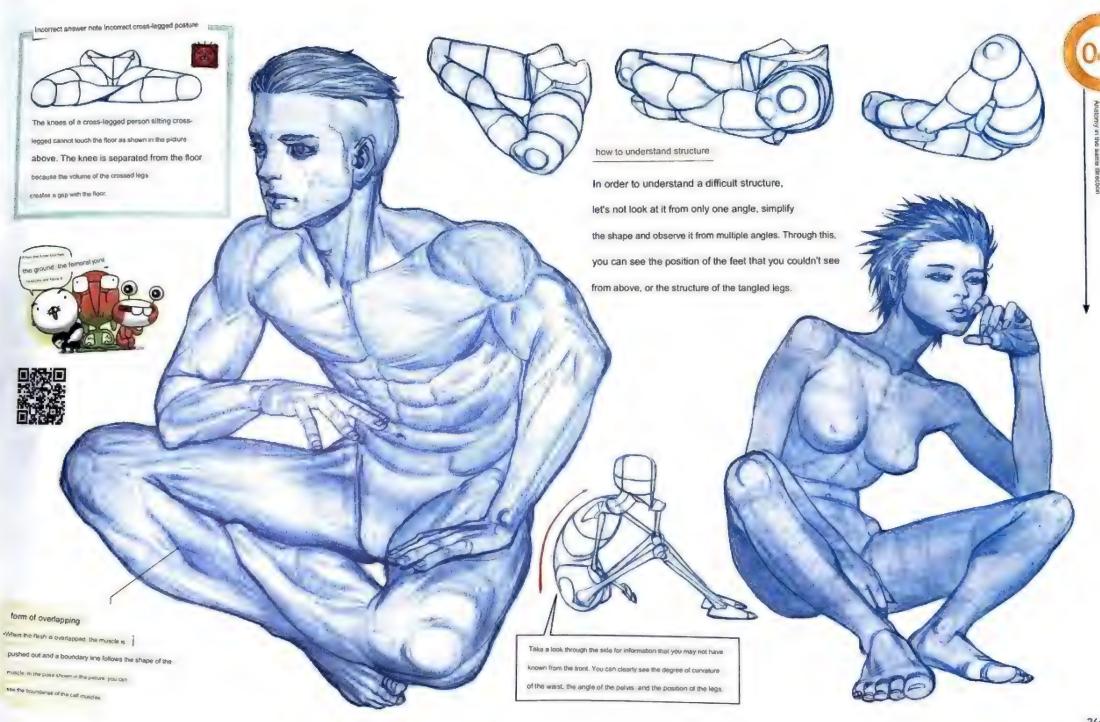
•Women's curved lower body flow

Unless it is a man's or a woman's leg built through exercise, in general, a woman's leg should be expressed with a long curved line rather than a short muscle flow. It is more effective to learn this flow through croquis practice rather than studying anatomy.



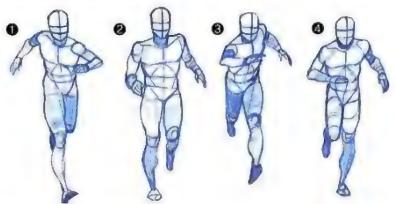








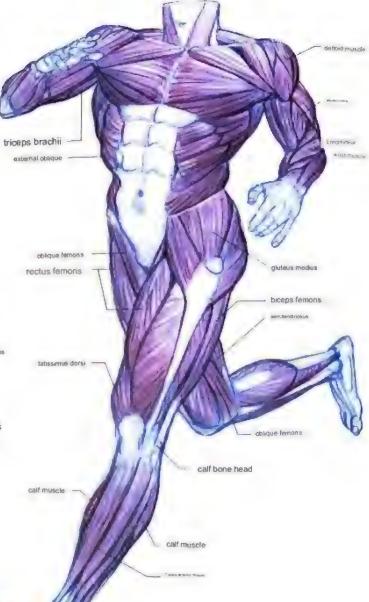




Drawing continuous motion of running

Walking or running can be seen frequently in everyday life. It's such a familiar motion, but if you divide it into a few scenes and draw it, it's not as simple as you think. The movement direction and center of gravity of the limbs are different for each movement, and you need to know these points accurately for each posture to express a natural movement. If you observe the posture in the picture on the right a little bit, you can see that it is the scene most similar to the picture in No. 2 above. When drawing a movement like this, if you think of it as a torso box, you can express various movements.

Characteristics of posture + by the staggared movements of the limbs body box due to It twists, from now on arms out to the body Bending in, the opposite arm is bent back a lot and lifted up not.

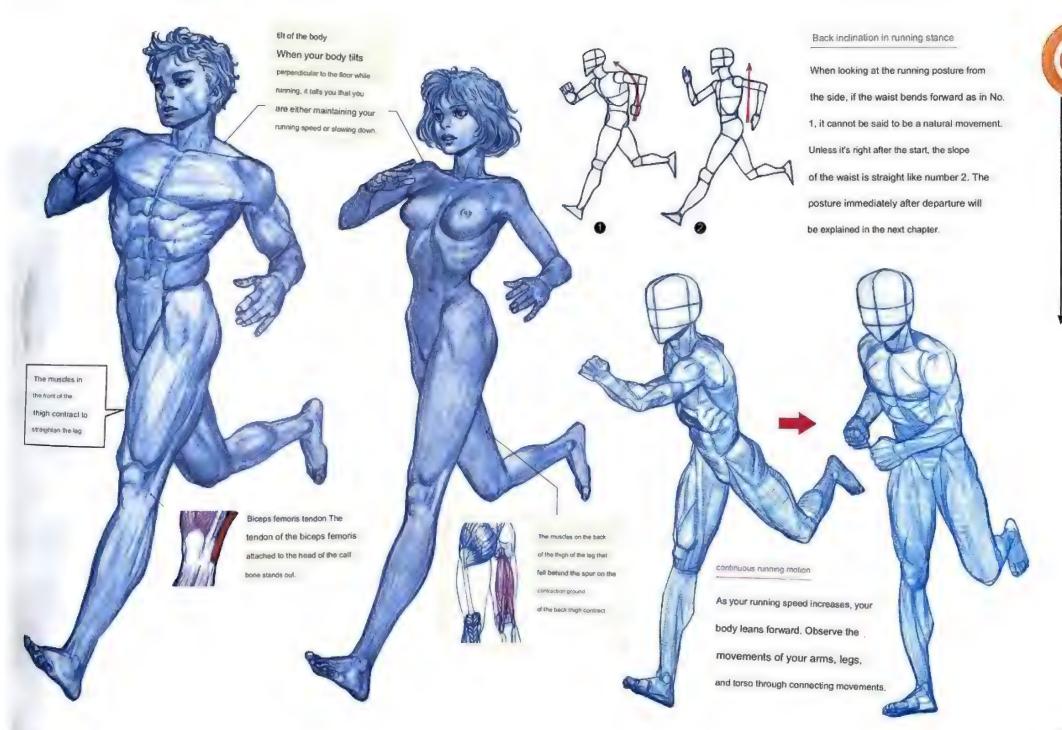


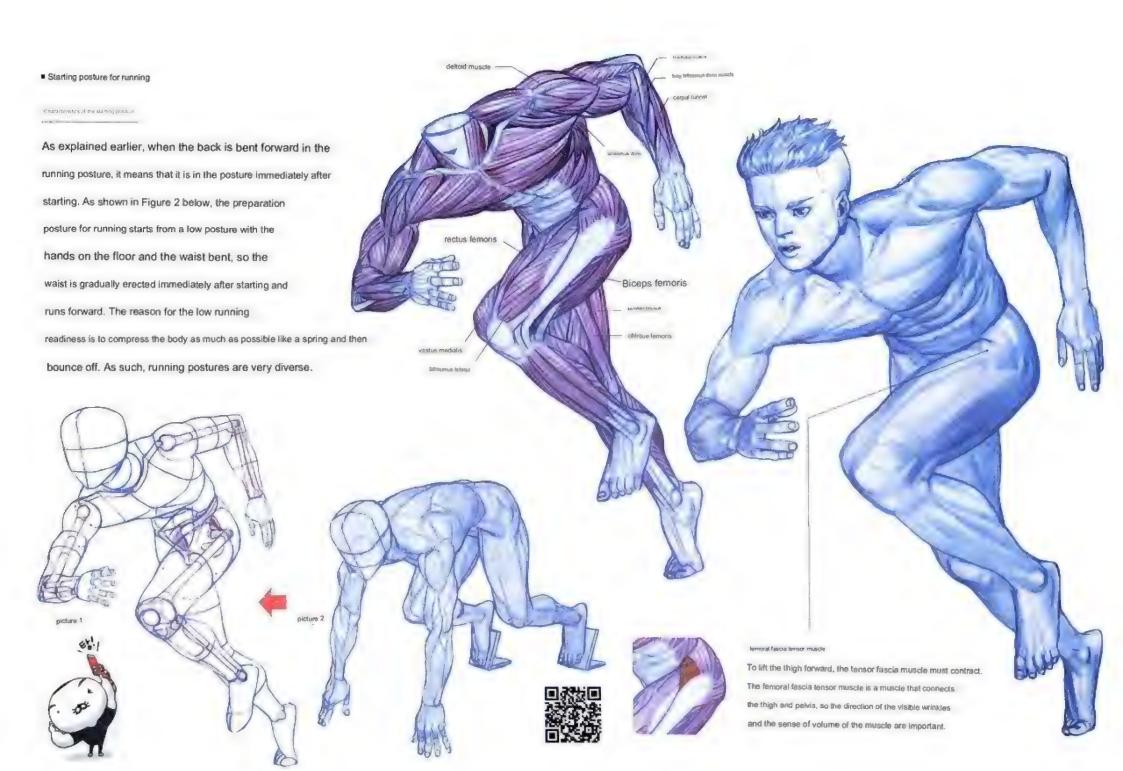


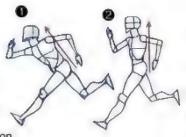




When students are asked to draw a running motion, they often make the mistake of holding the figure's arms upright and shaking them back and forth, like an emergency exit mark. It is correct that the angle of the elbow is bent at 90 degrees, but the direction of the arm should come inside the body. If the tilt of the shoulders and pelvis is both horizontal and looking straight ahead, or if the heel touches the buttock, it becomes an unnatural movement.

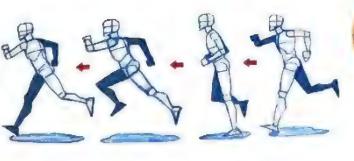


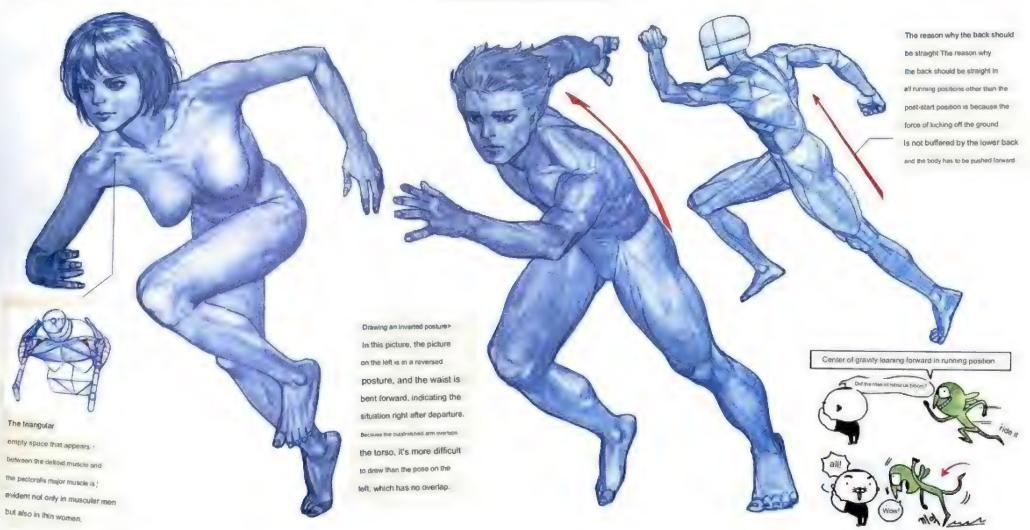


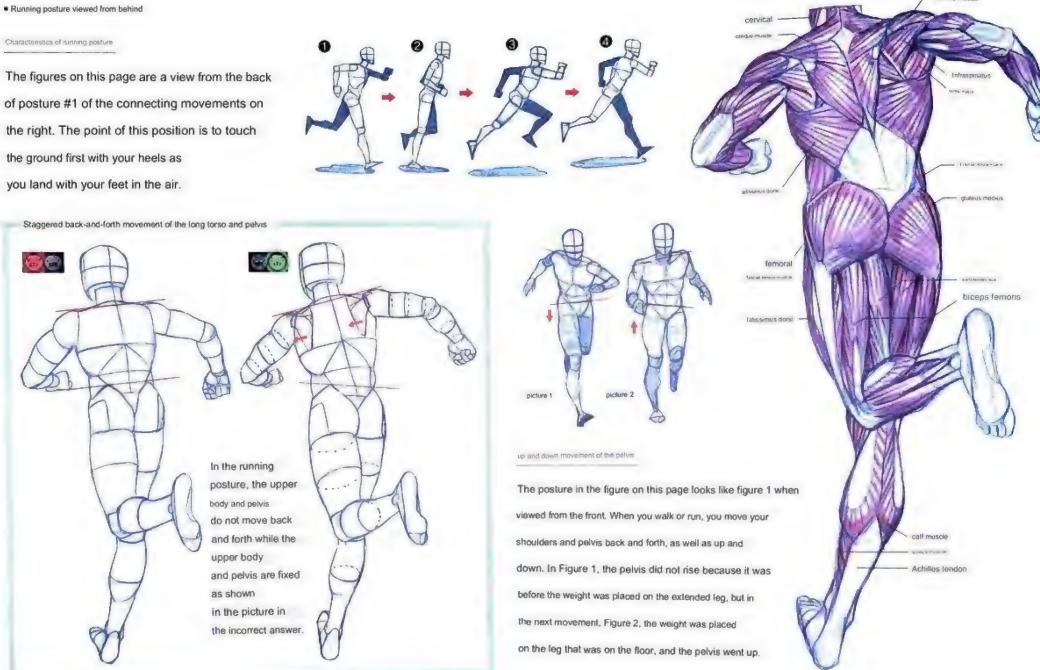


View continuous motion from the side

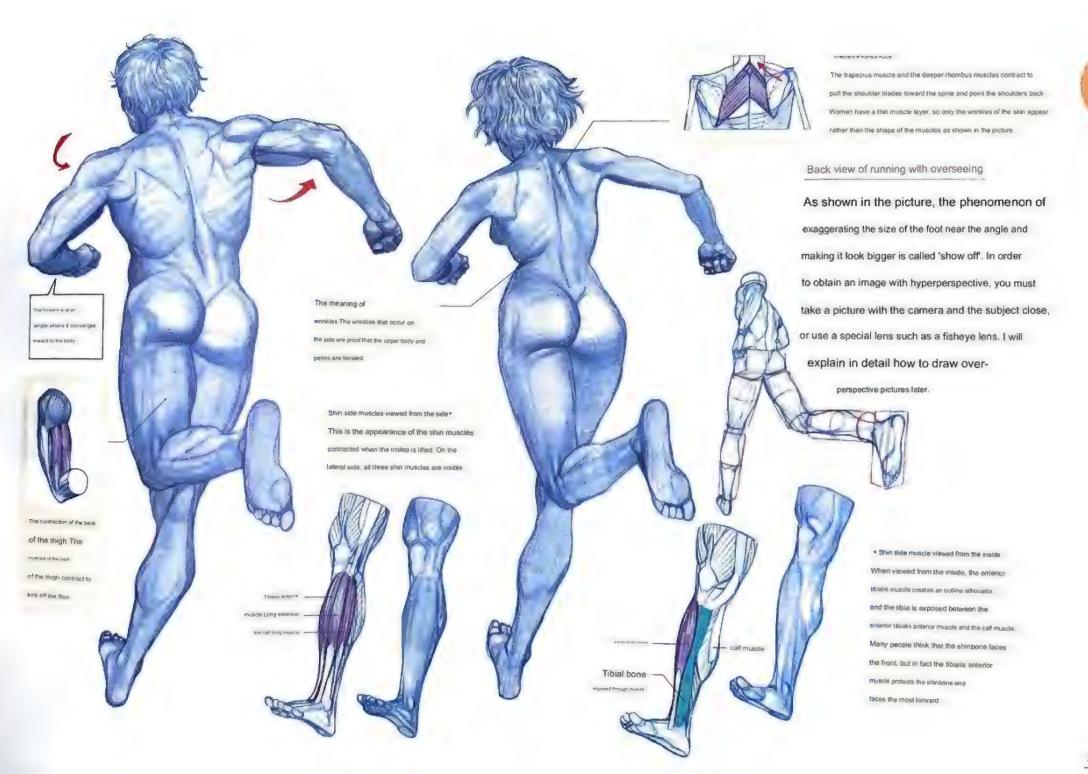
In the running motion, the arms and legs move back and forth, so the characteristics of the movement stand out from the side rather than from the front. Since most of the joints in the limbs move back and forth, it is important to observe from the side when drawing any action.

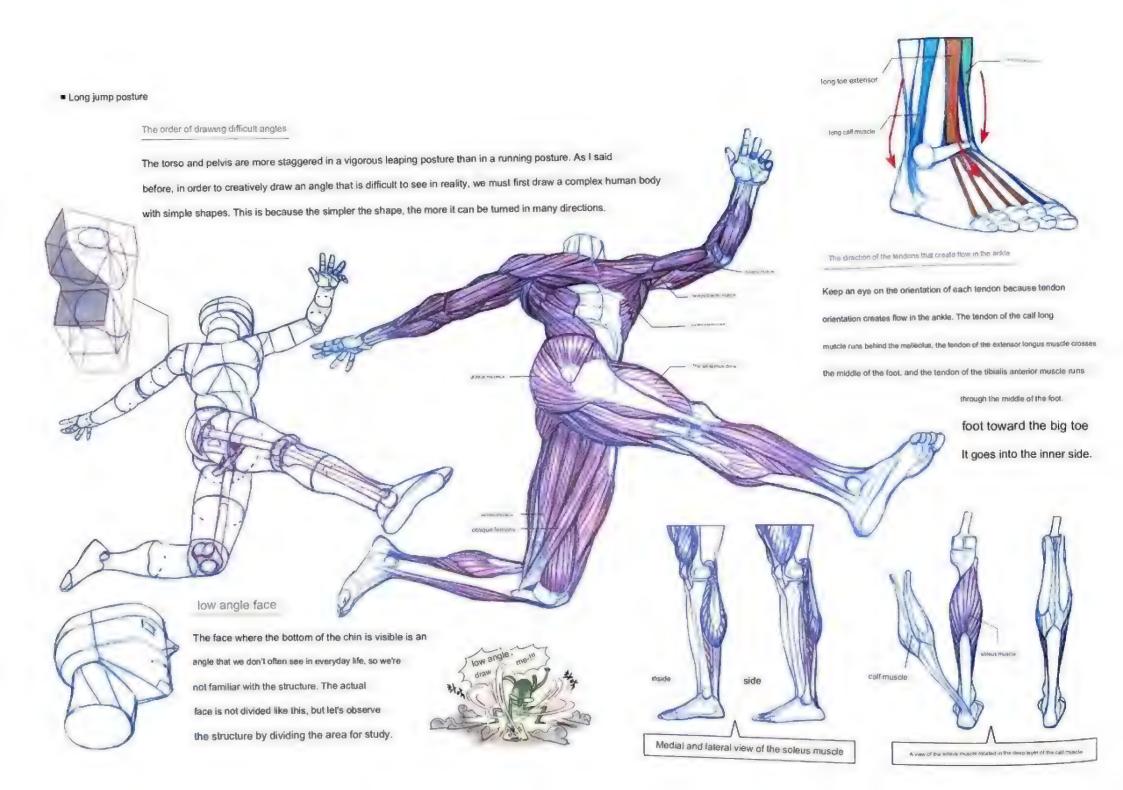


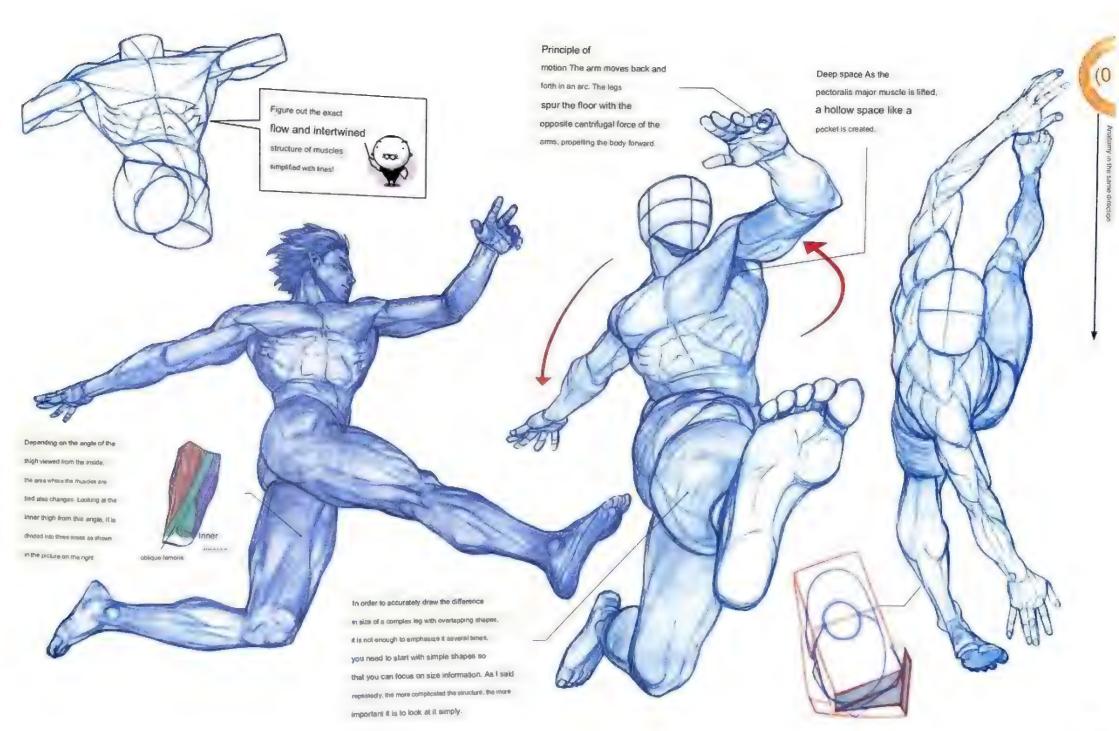


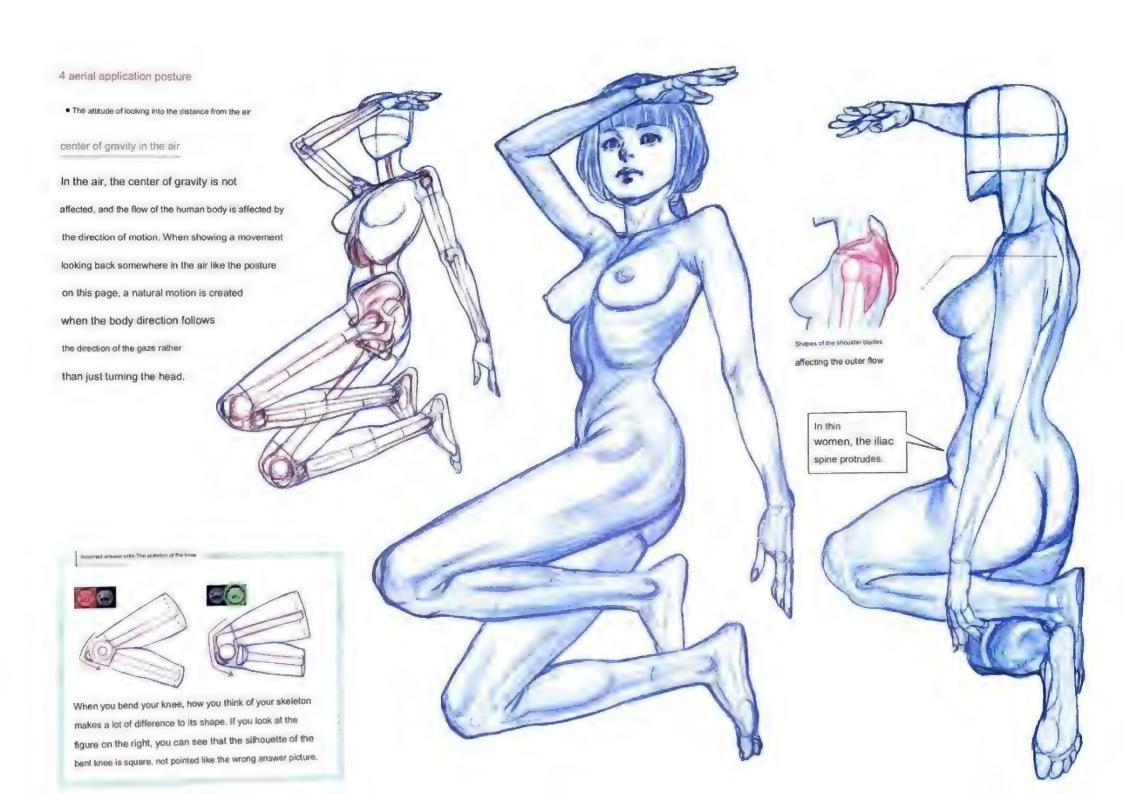


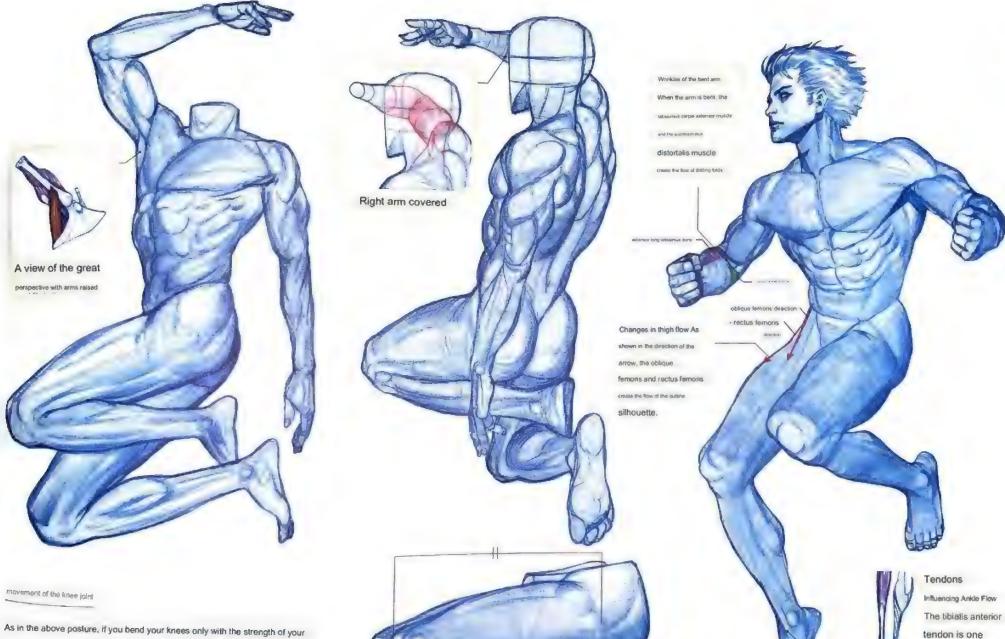












As in the above posture, if you bend your knees only with the strength of your legs, your heels will not touch your buttocks. As shown in the picture on the right, you have to sit down with your weight so that your heels and buttocks touch each other. •The length of the femur is 1:1 from the length of the tibia to the heel.

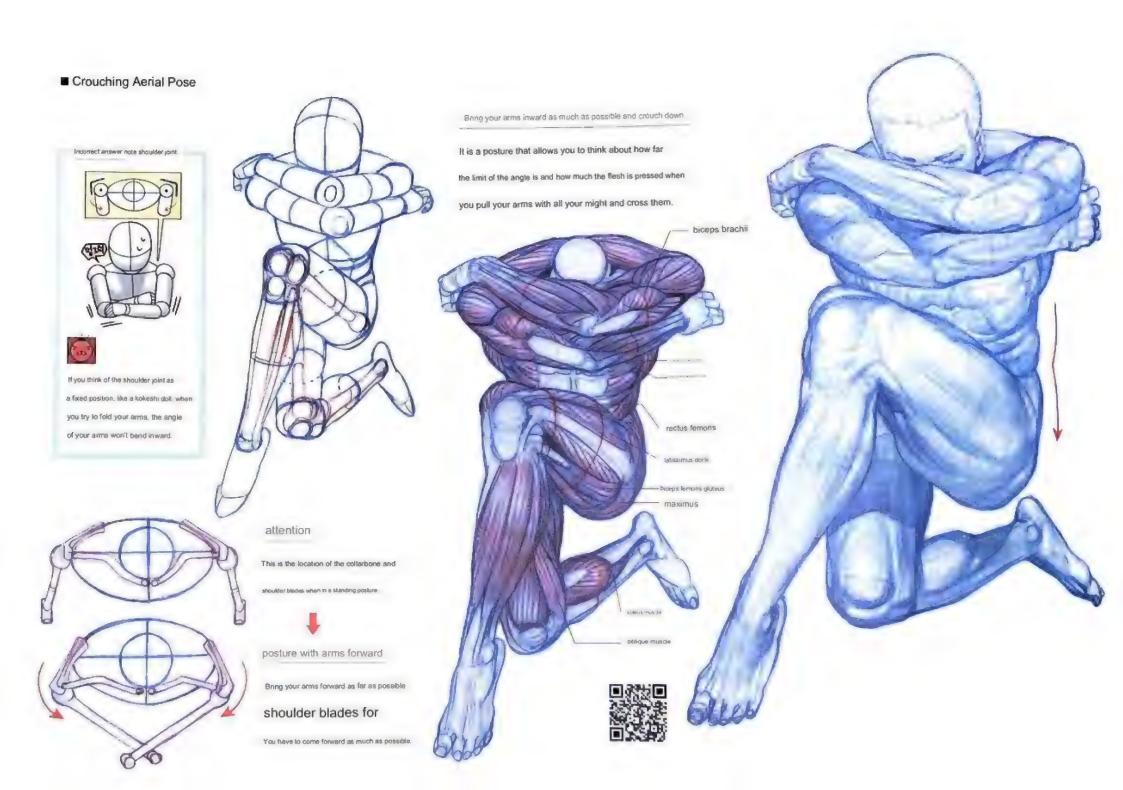
of the most prominent flows

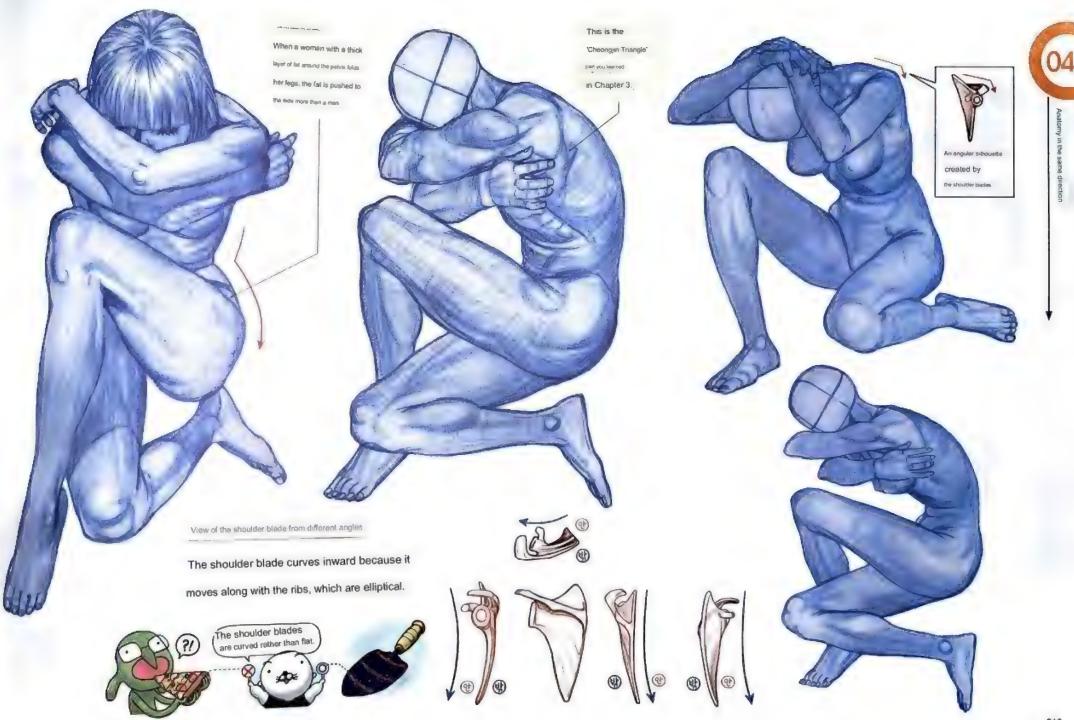
in the ankle.

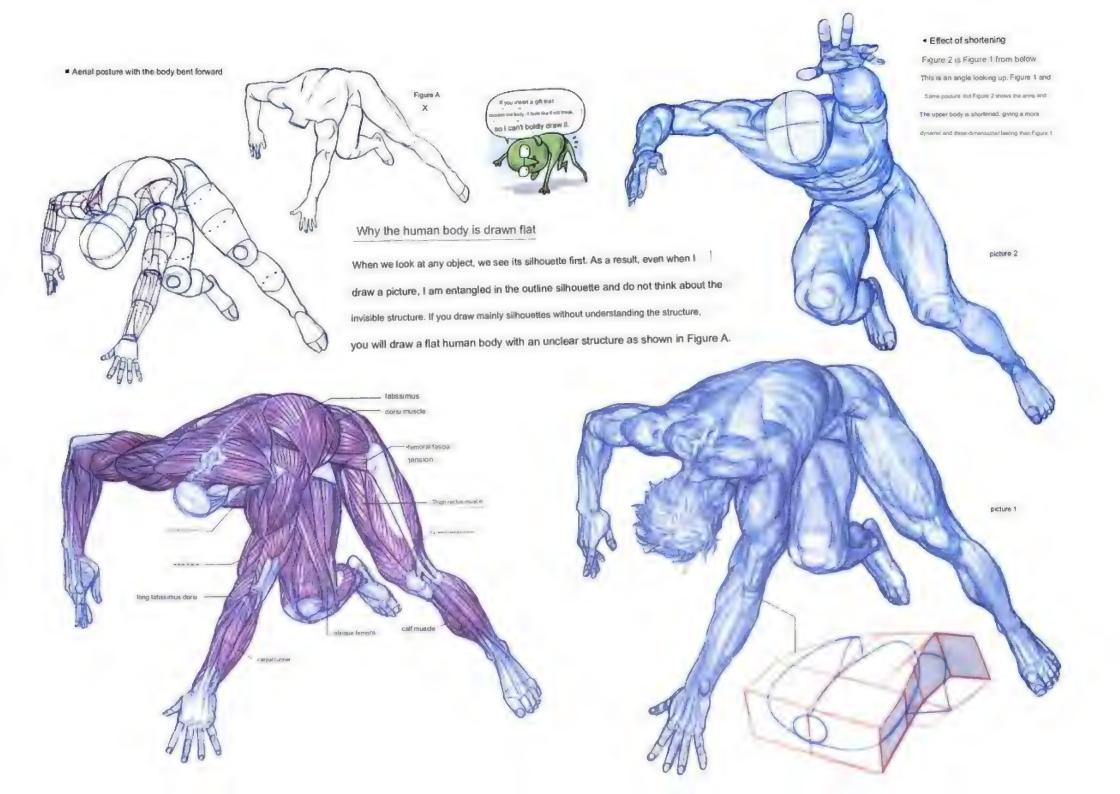
tine causes them to appear shorter than the original length

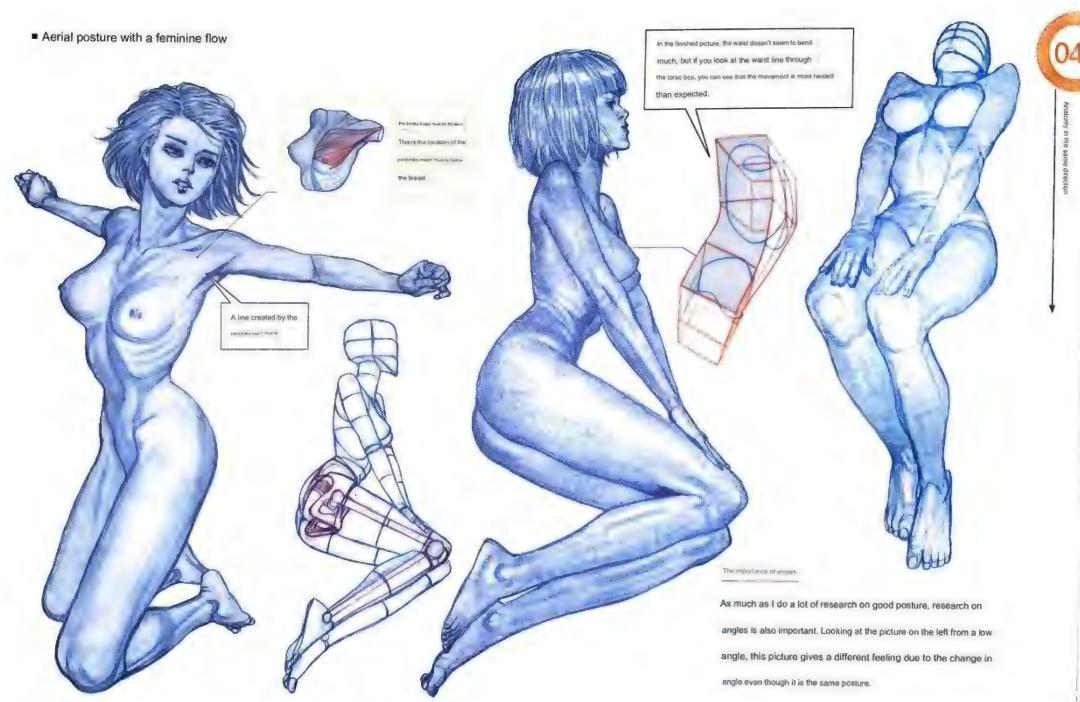


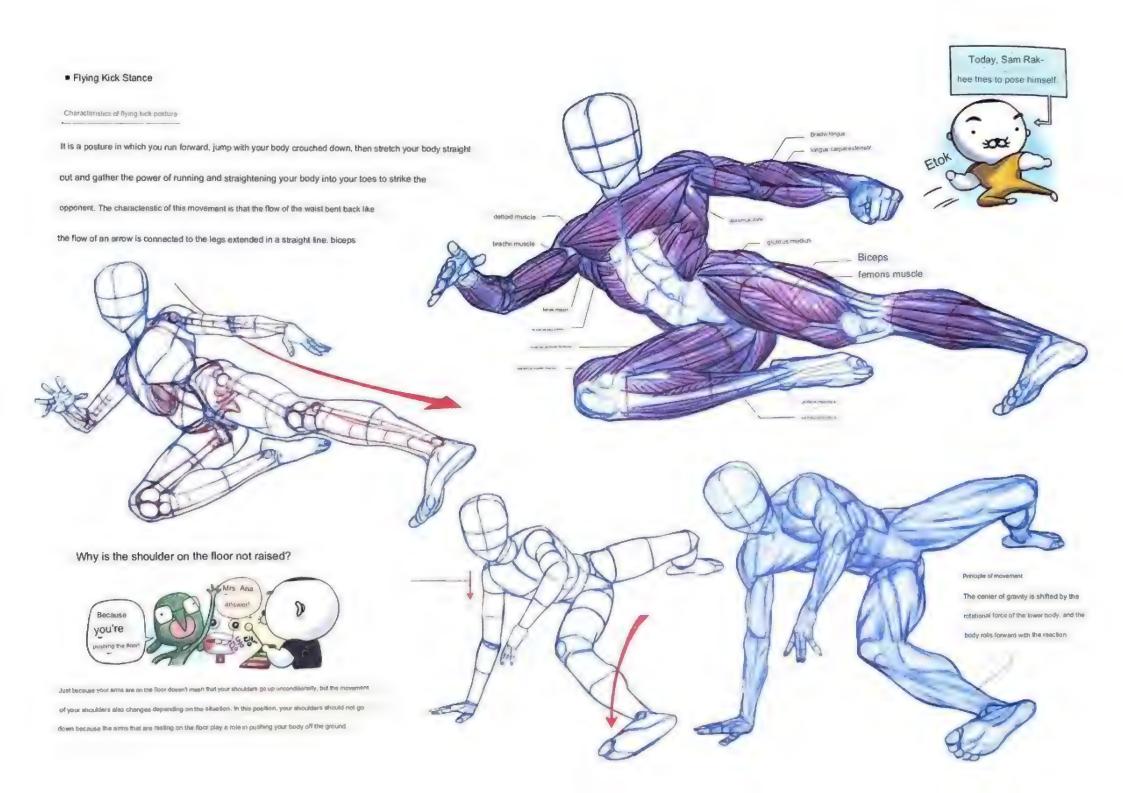


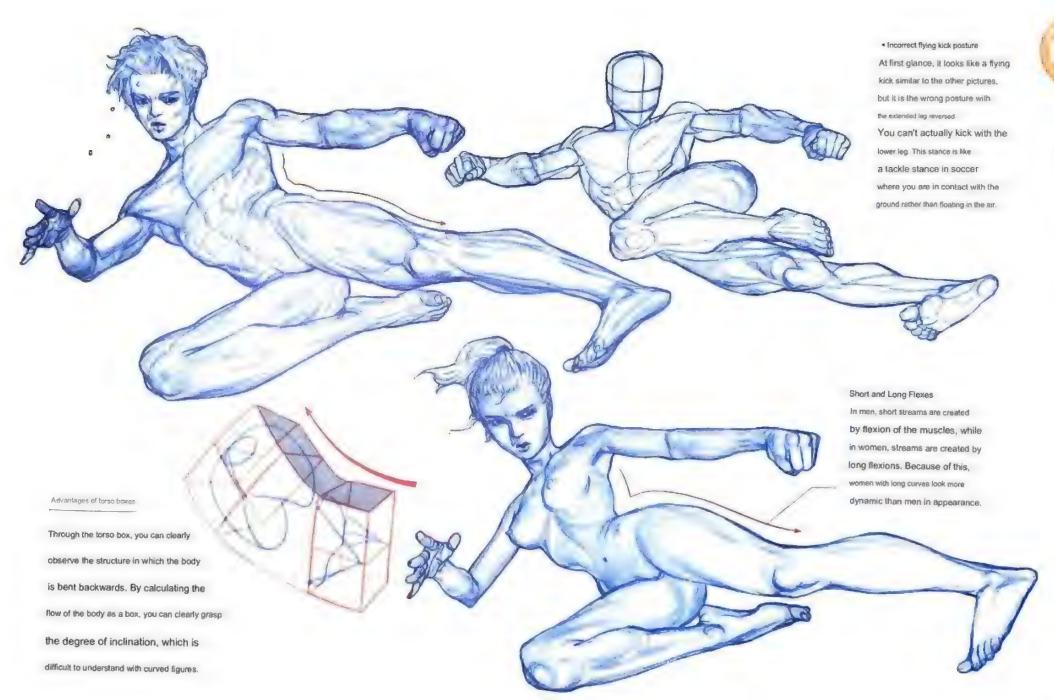


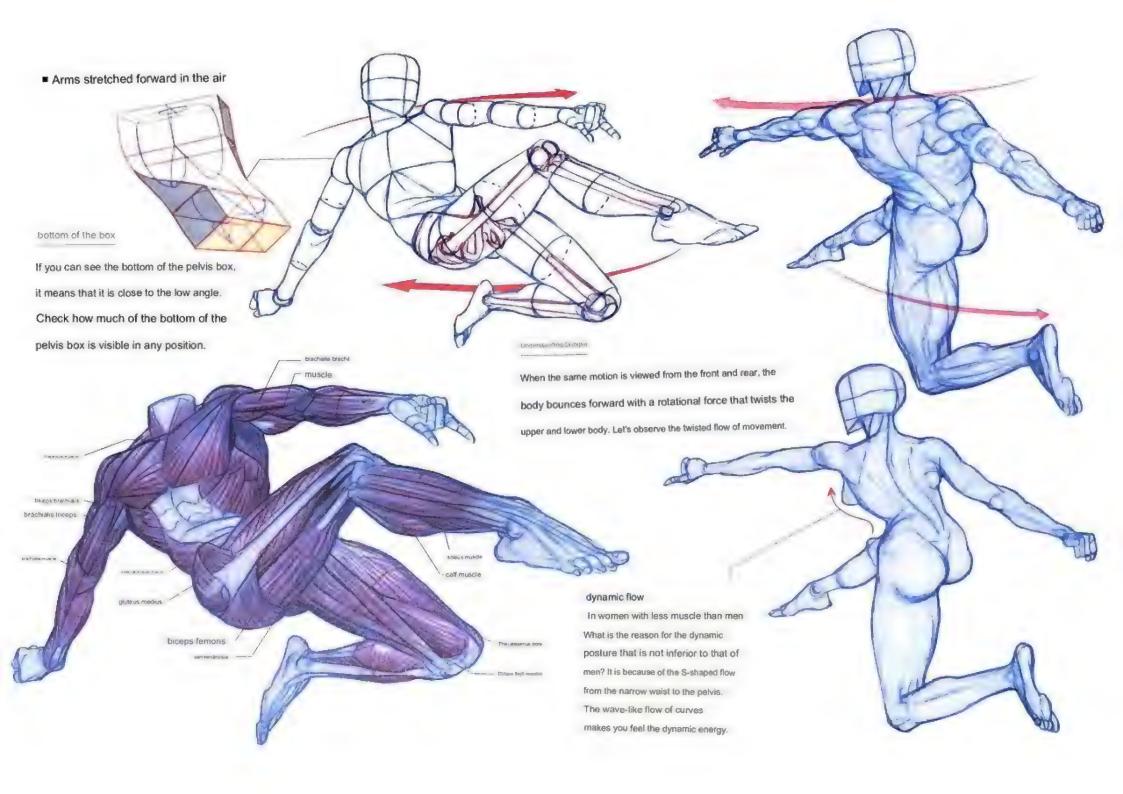


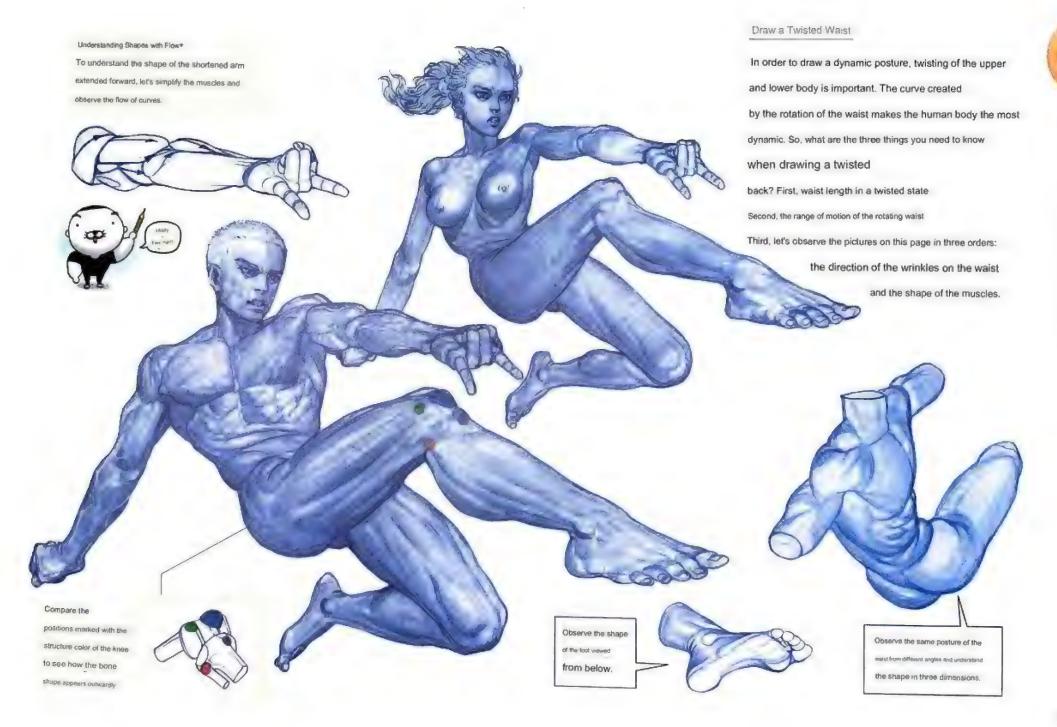


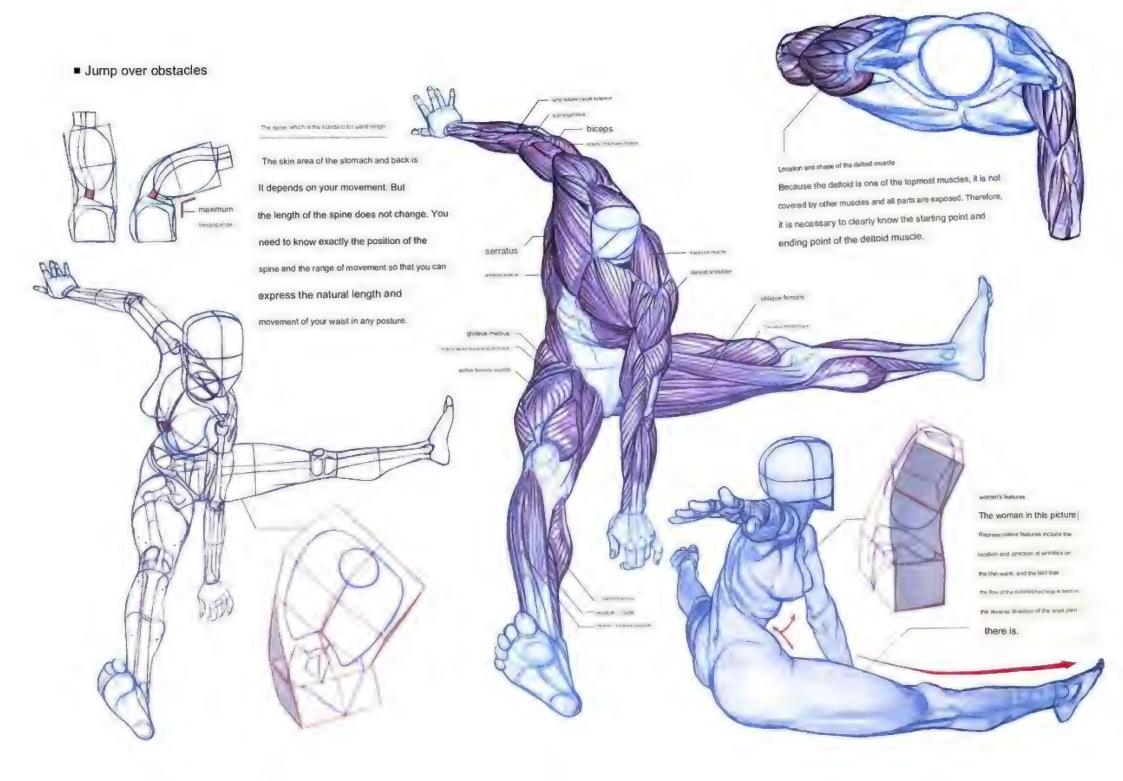




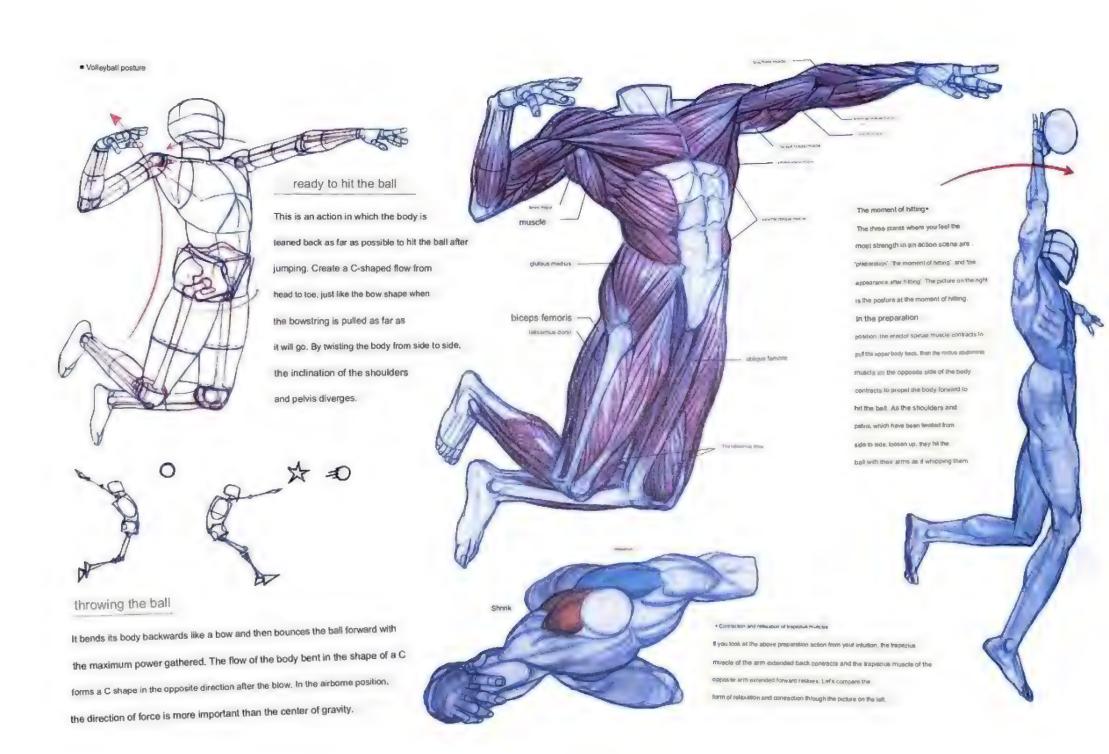


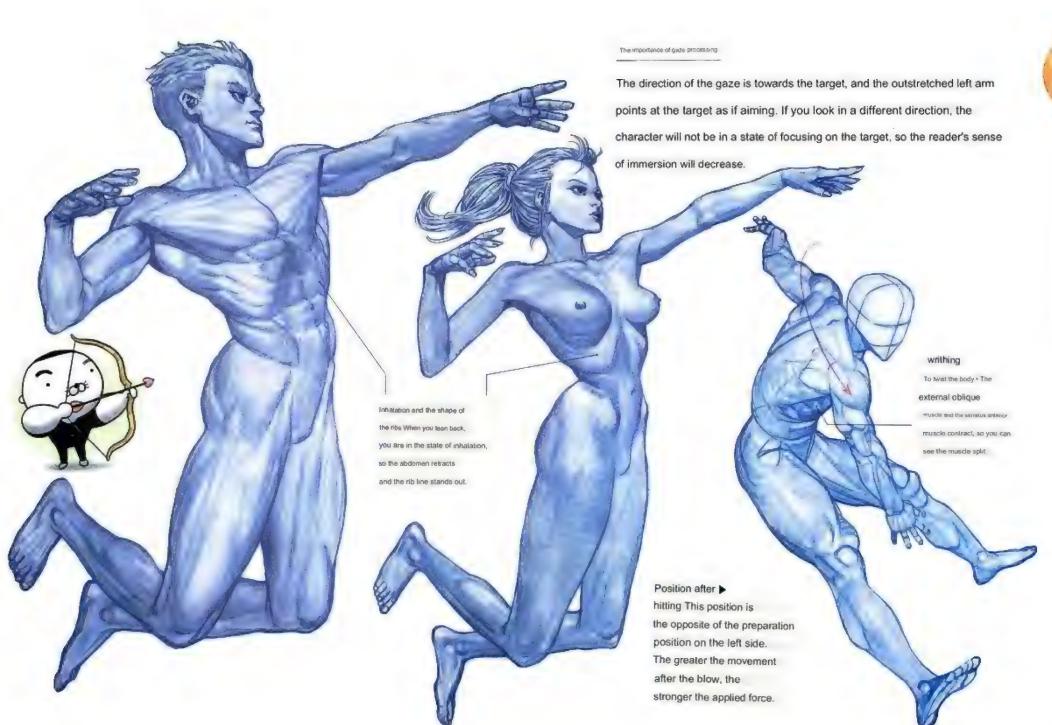






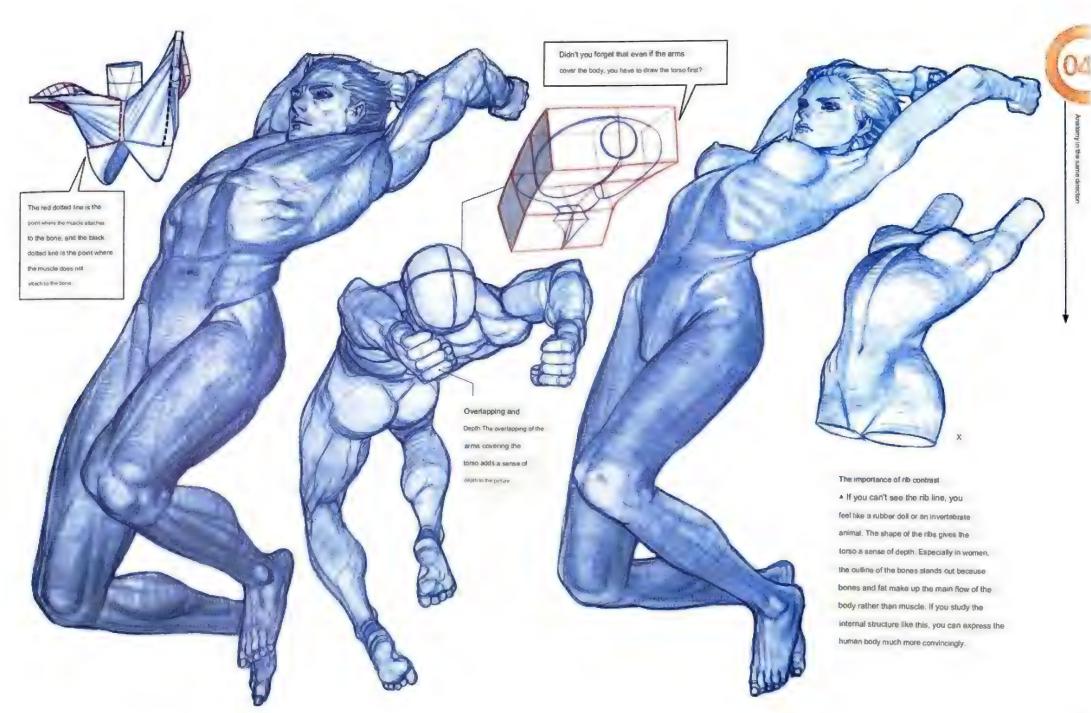


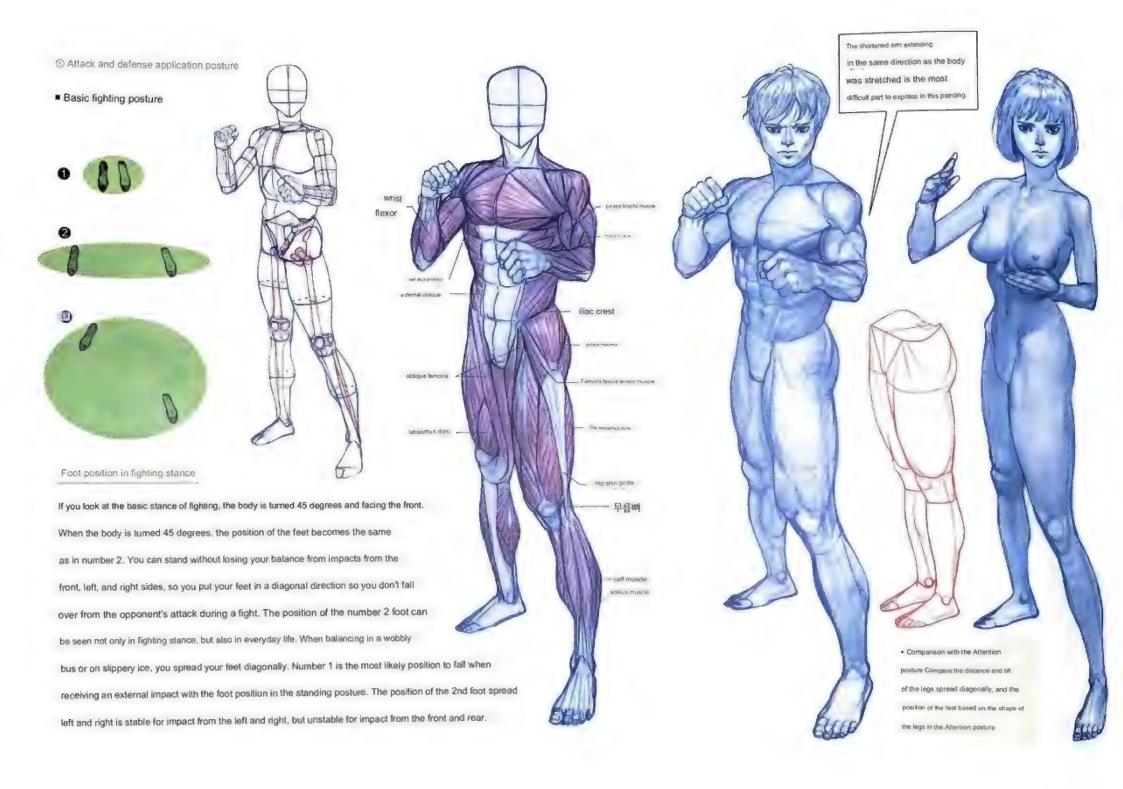


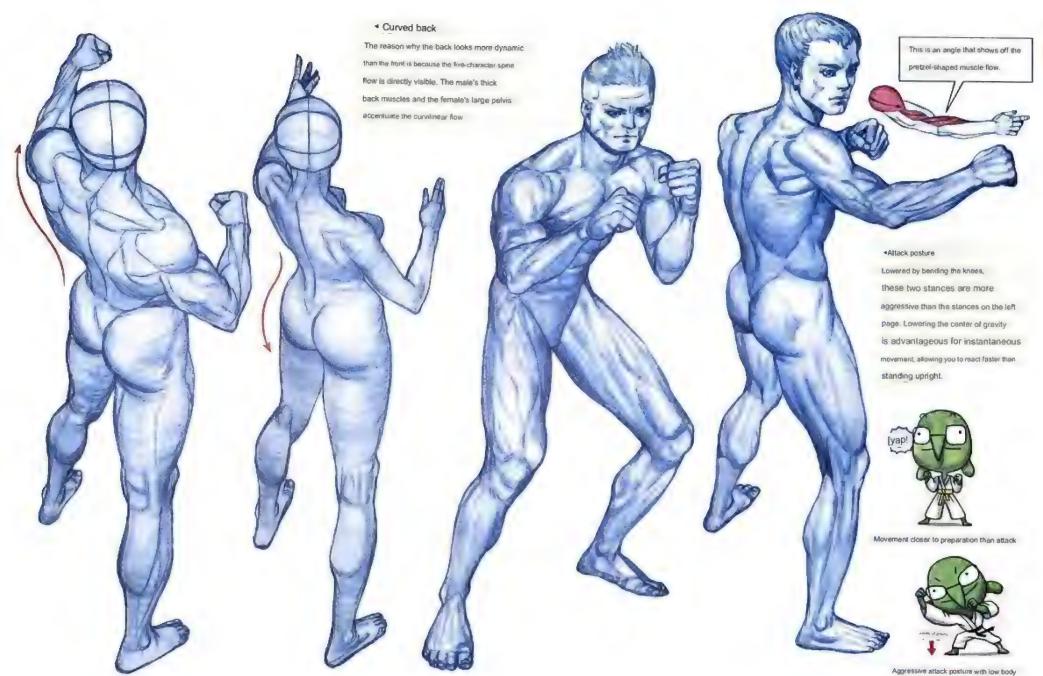


biceps -SEASTH STREET, STREET, WITCH Jump posture backward posture Raise your arms while leaning your torso back, revealing the rib line due to inhalation. Bones do not pectoralis change in length or volume depending on movement, so if you apply flesh based on external oblique the skeleton, you can maintain the proportions of the human body even in difficult postures. gluteus medius labsaimus dorsi The role of the serralus anterior biceps femons muscle muscle + When you lift your zern, the semilus entener muscle pulls the shoulder blade in the direction of the arrow call muscle Figure A When the collarbone is not moving As described above, if the clavicle does not move and only the arm is raised, the distance between the face and the arm does not narrow as shown in Figure A, giving a toy-like feel. Responsition between the sensitive enterior muscle and the scattlets + The end point of the sension dinlettor multiple is the prior corner of the acaptate. The scapula is yet structure that covers

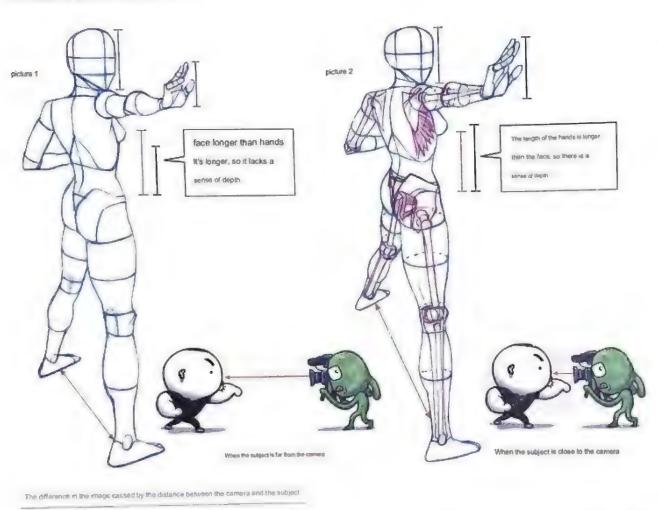
the senatus antenor muscle:

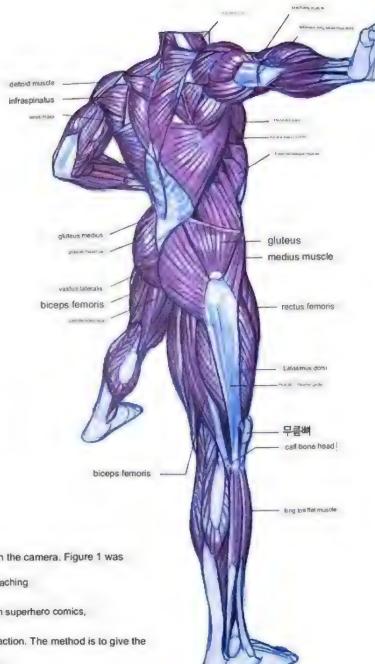






Basic fighting posture with one hand out



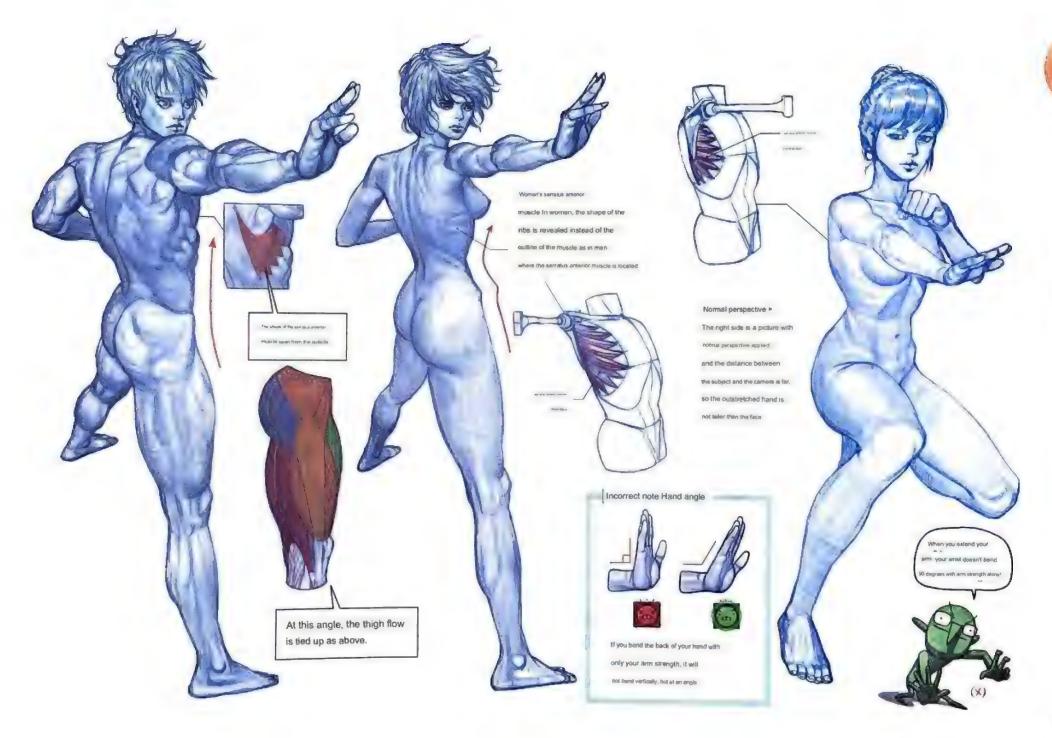


There are two ways of shortening. There is a way to zoom in the camera lens to shoot the subject, and a way to shoot the subject directly with the camera. Figure 1 was taken through zoom-in, and this method is used when you want to express a general image rather than a sense of depth. Figure 2 is taken by approaching the subject directly, and is used when the three-dimensional effect of the subject is clearly displayed to maximize realism and presence. In American superhero comics,

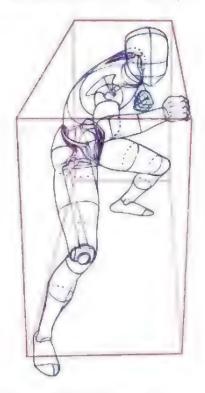
the camera directly approaches and depicts objects from the point of view in order to create a sense of urgency or dynamic situations in the action. The method is to give the

size difference between the object near the screen and the object behind it. As shown in Figure 2, when you reach out your hand toward the screen,

the forward hand is expressed larger than the face behind it, giving the impression that the situation on the screen is happening close to the screen.

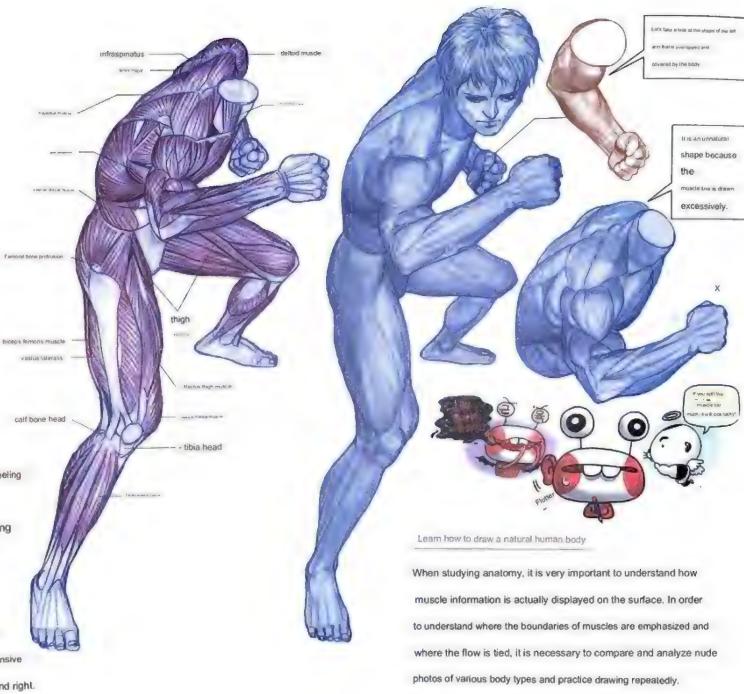


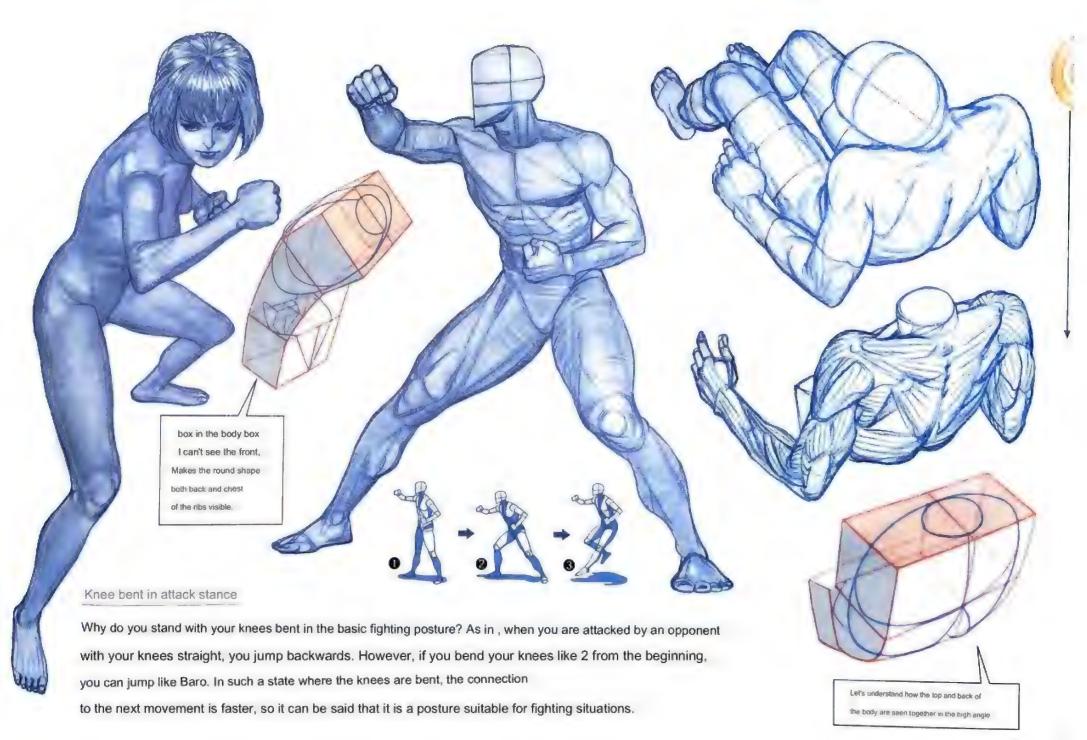
Fighting readiness seen from a high angle

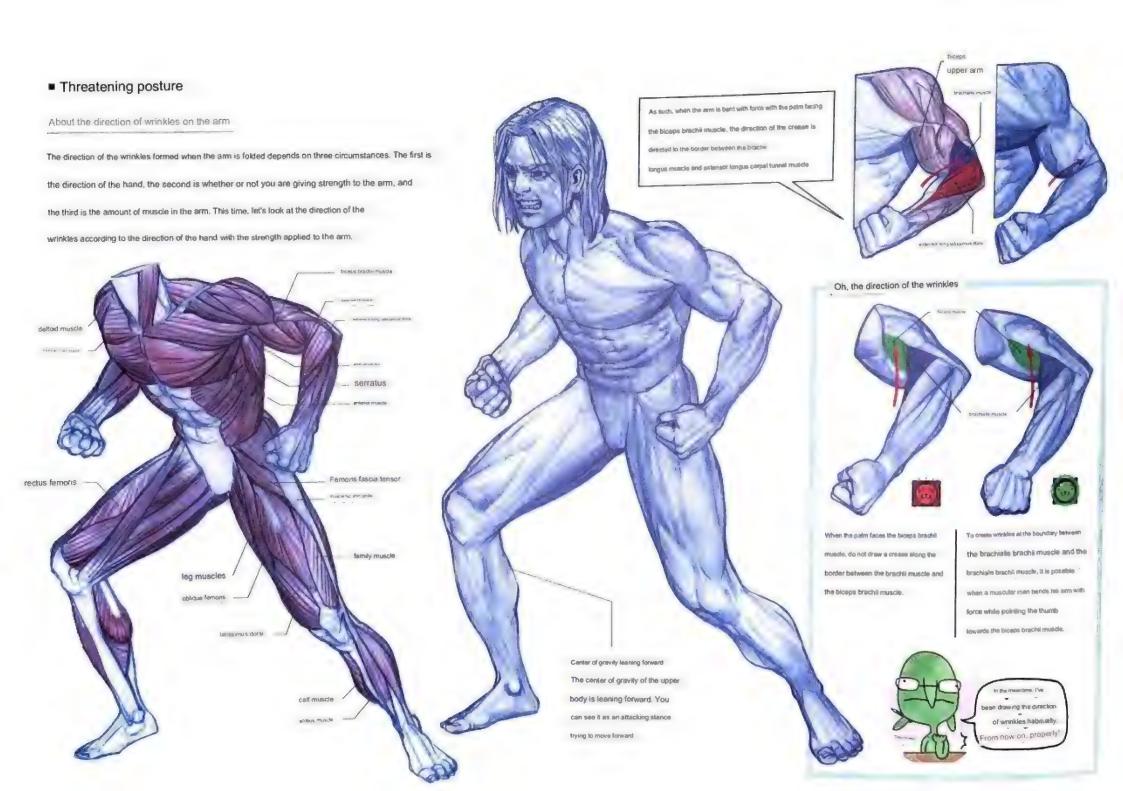


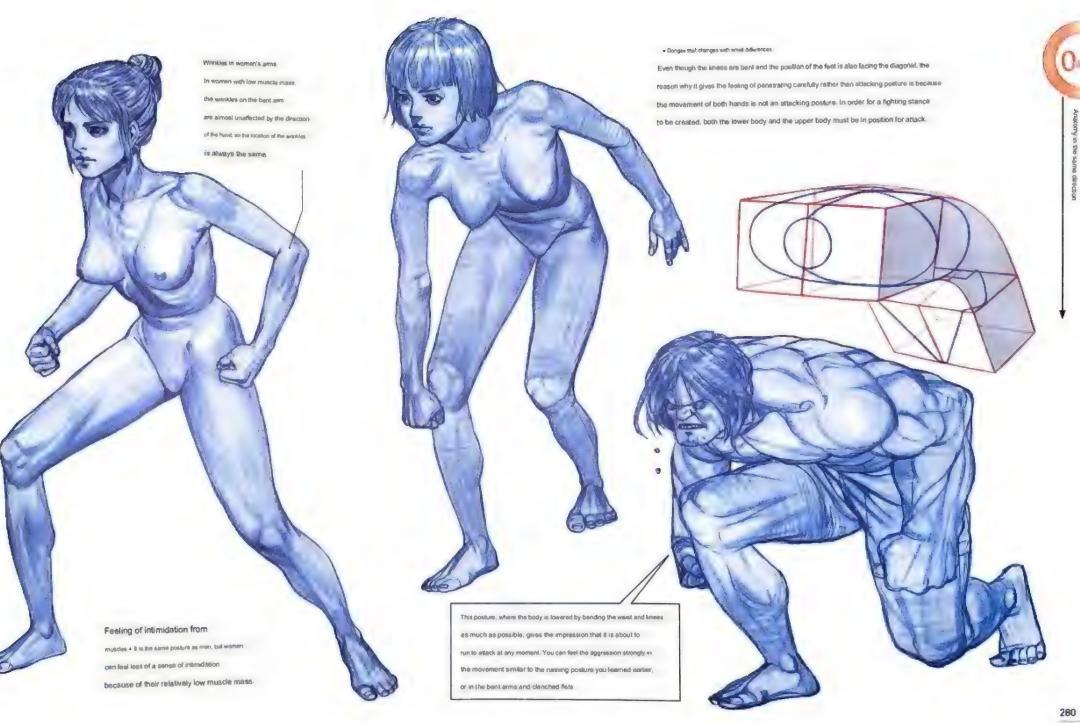
Drawing high-angle action poses

High-angle 3-point perspective gives a more colorful and dynamic feeling than usual, and is often used in action scenes as it is suitable for emphasizing objects in front of the screen and creating dynamic scenes. Analyzing the poses on this page, starting with the upper body, the forward arms are in a position to defend the face, and the backward arms are in a preparation posture for a punch attack. In the lower body, it bends both knees and spreads its feet wide in a diagonal direction to take an offensive and defensive stance that allows it to move quickly forward, backward, left and right.









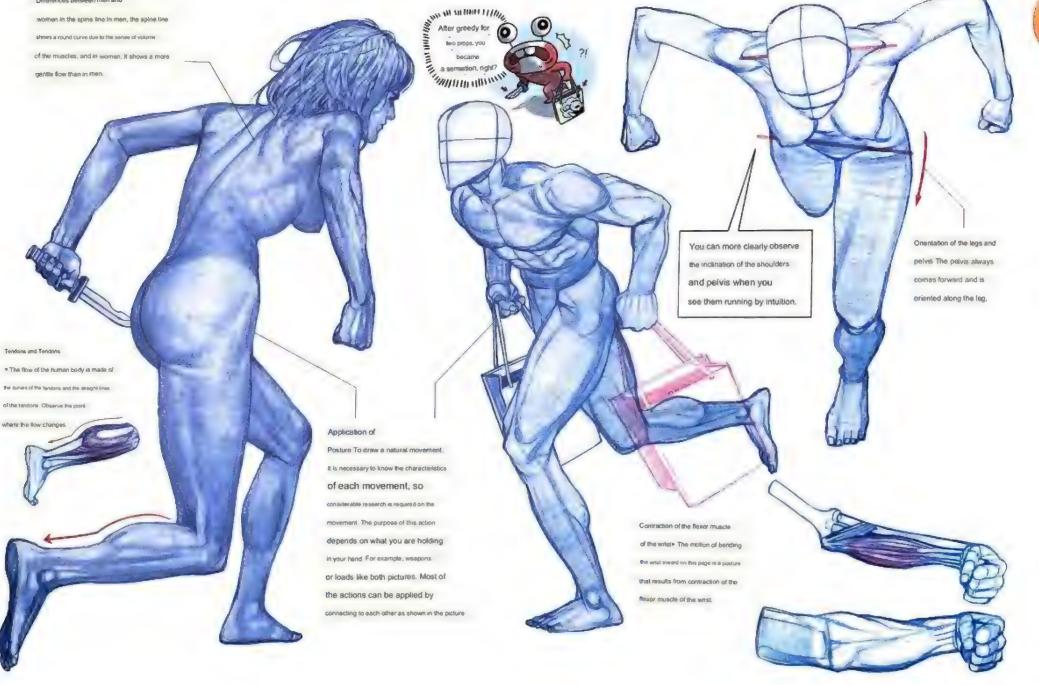
Animal-like threat posture





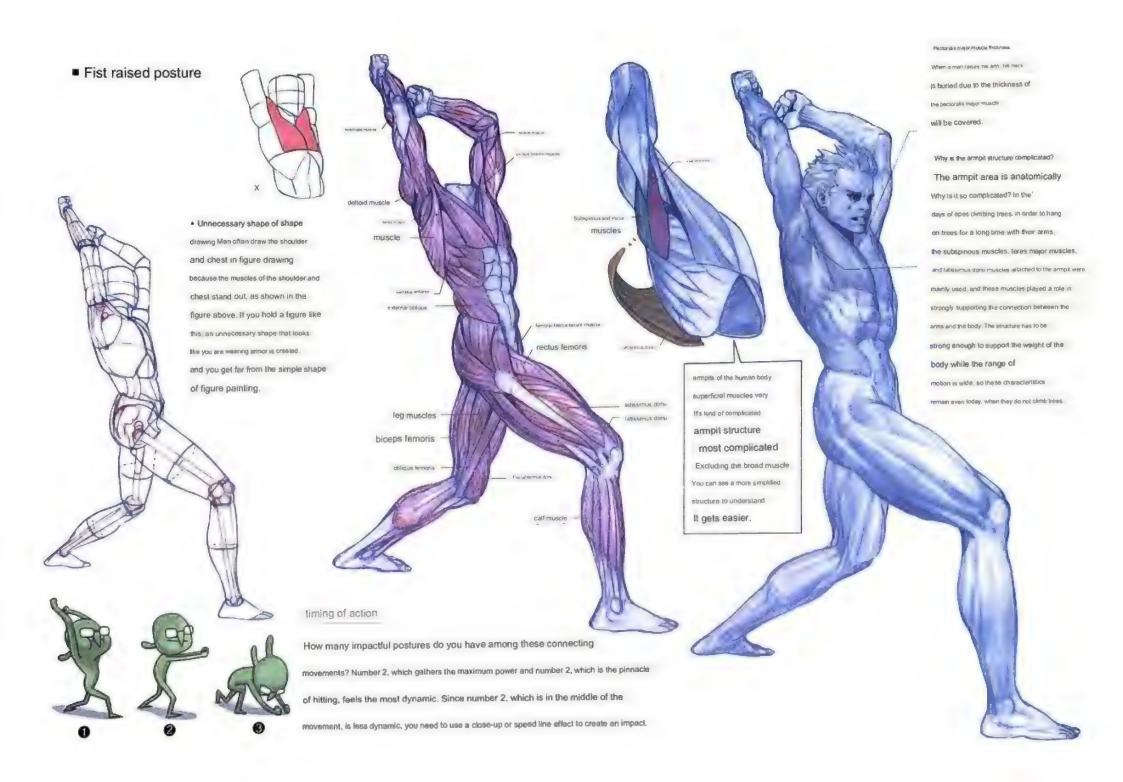


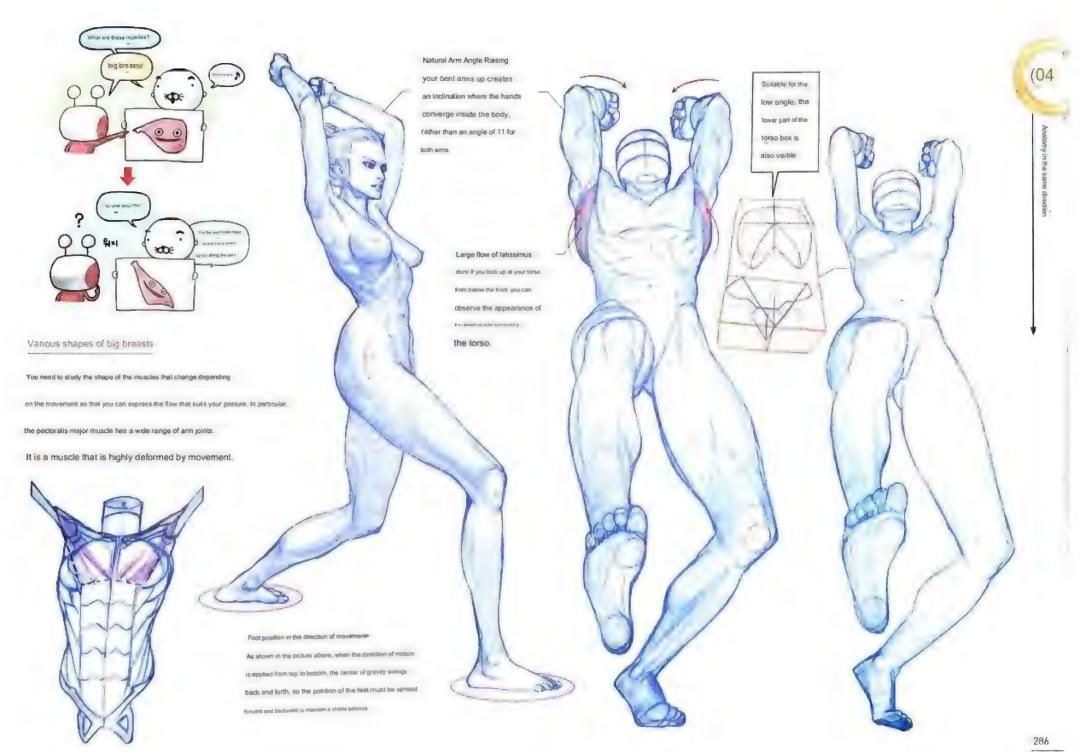




Differences between men and

women in the spine line in men, the spine line

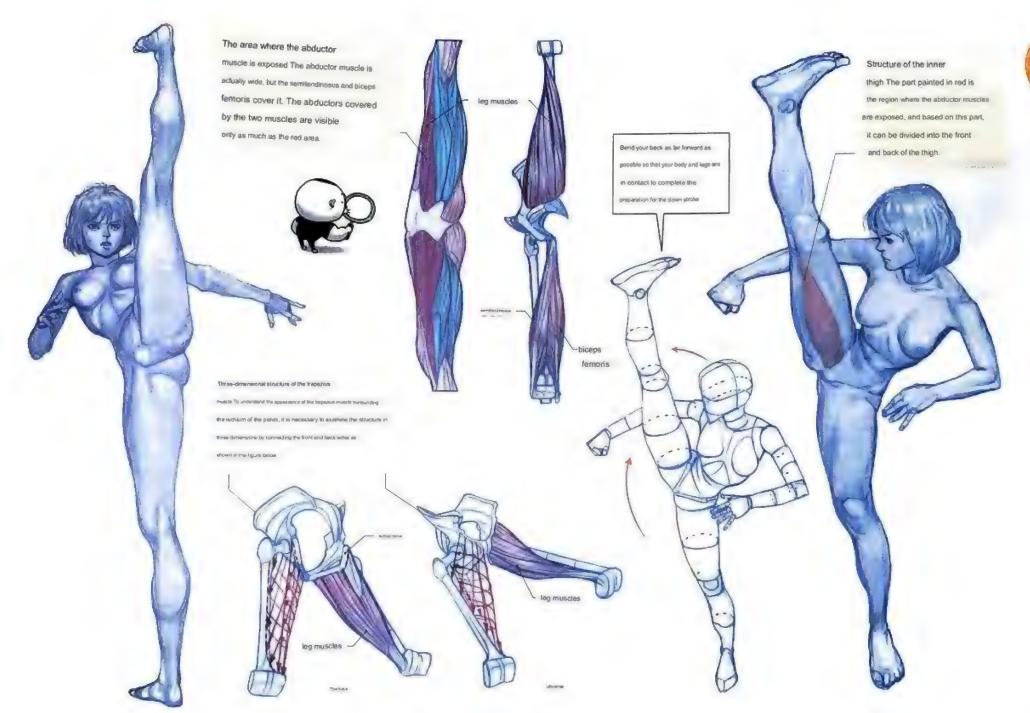






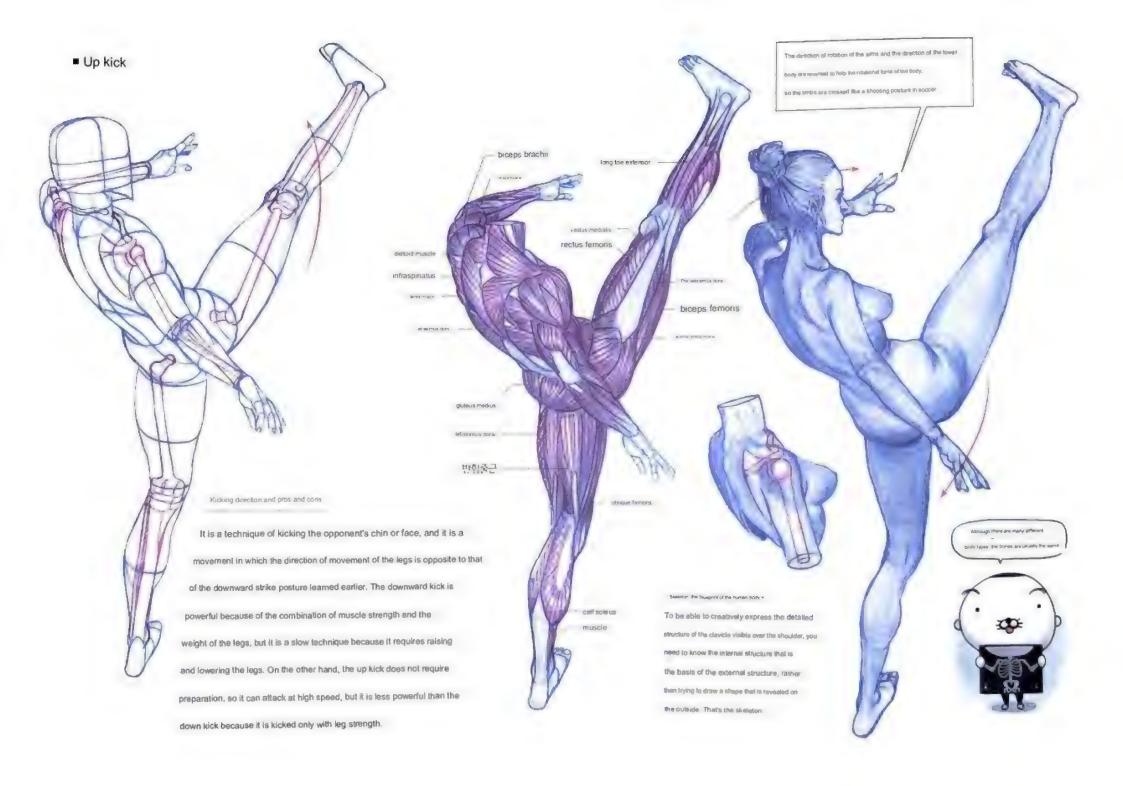


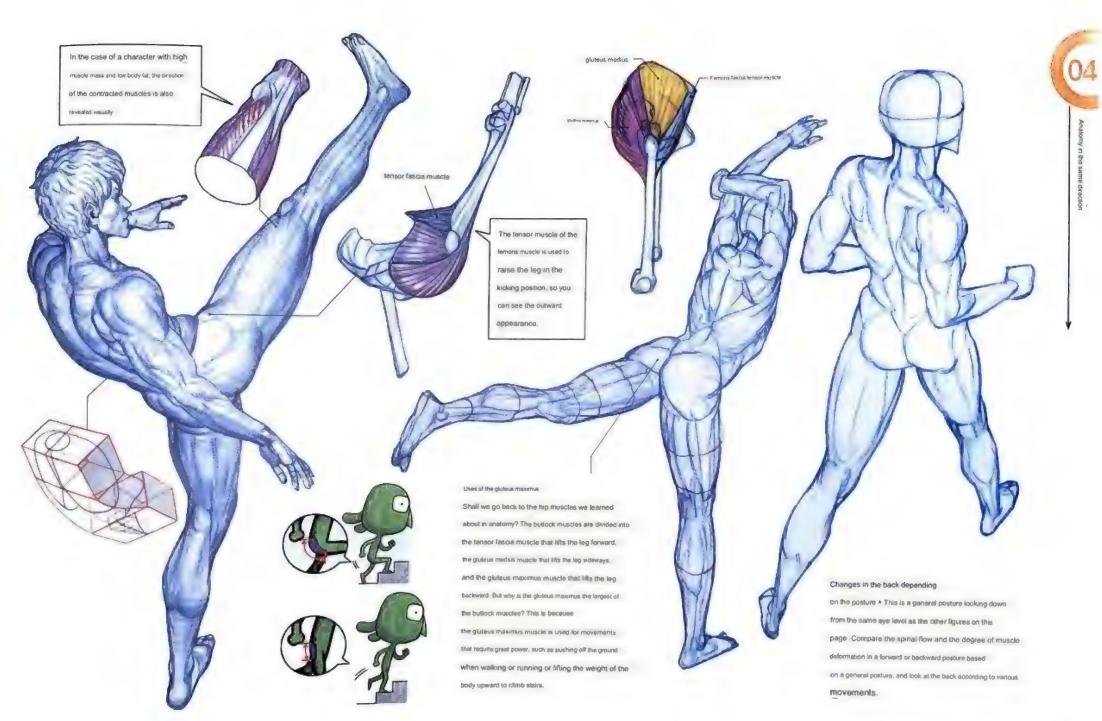
omy in the same direction

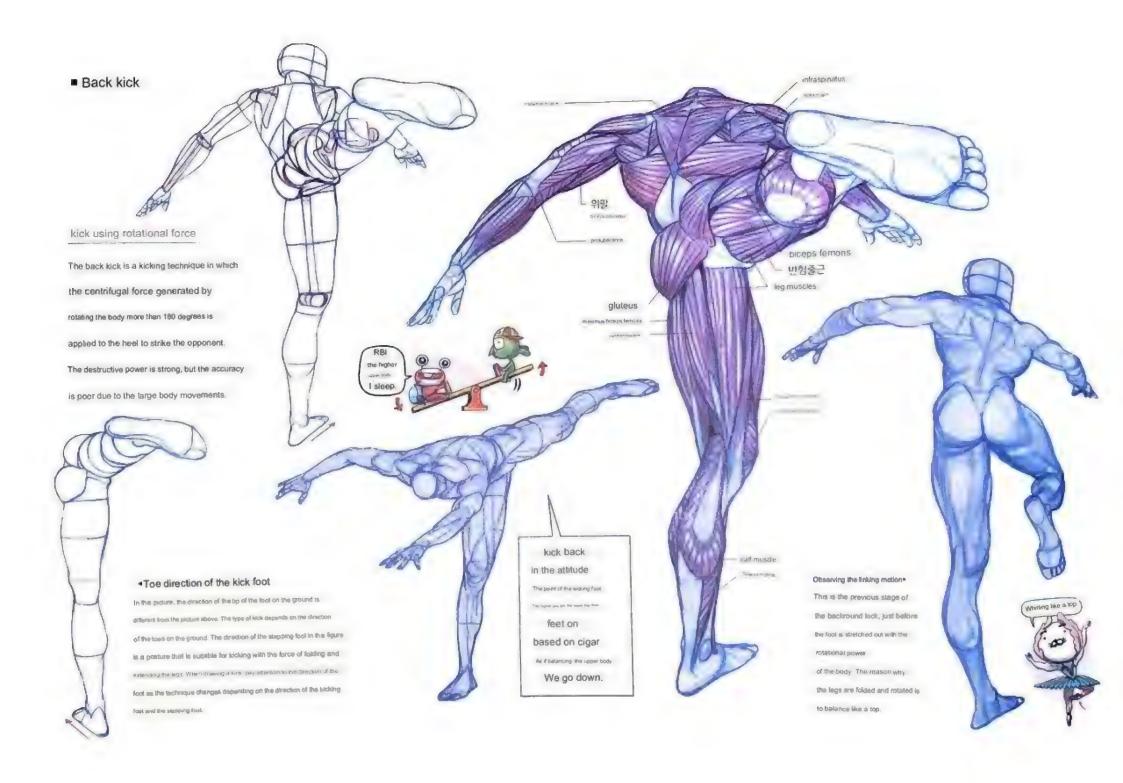




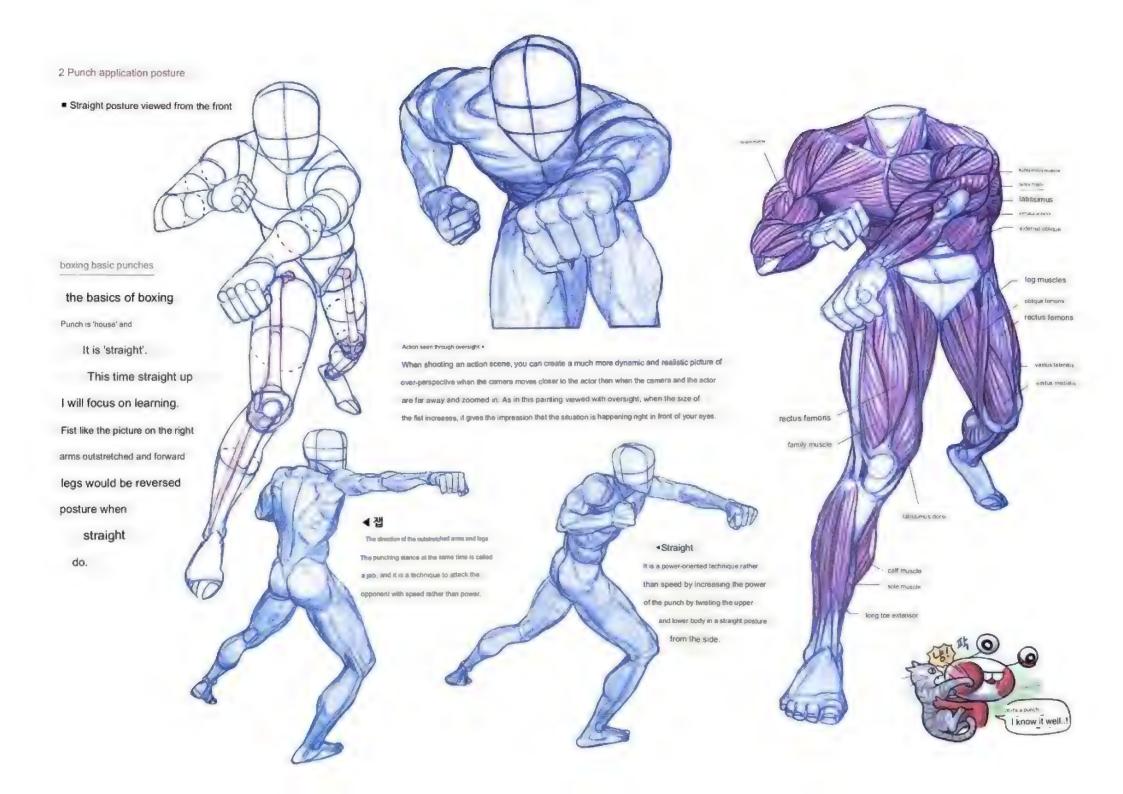




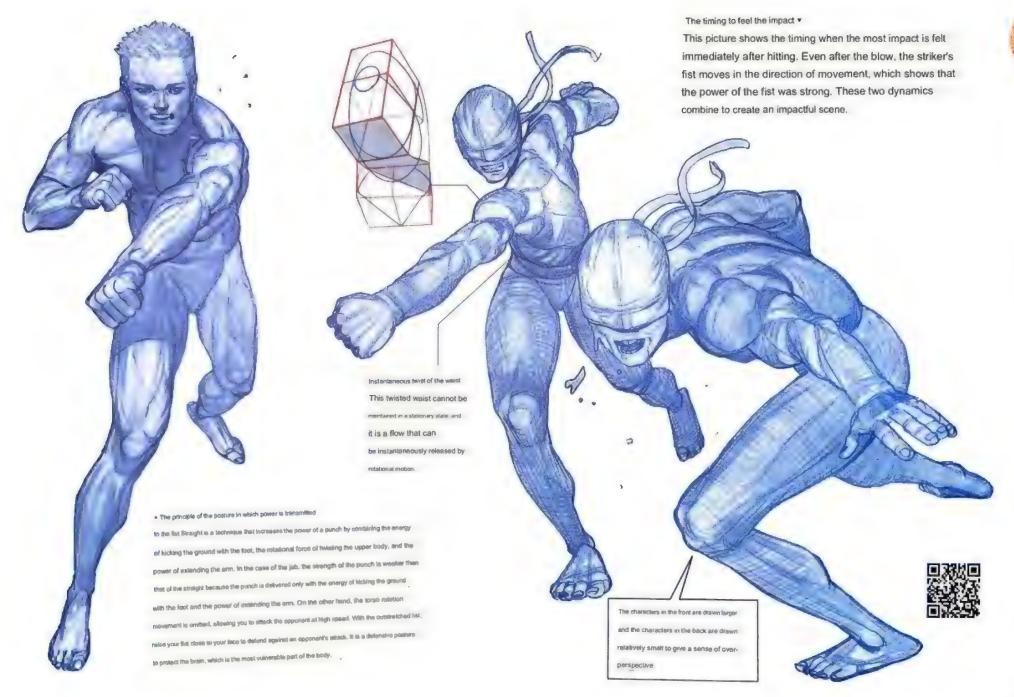




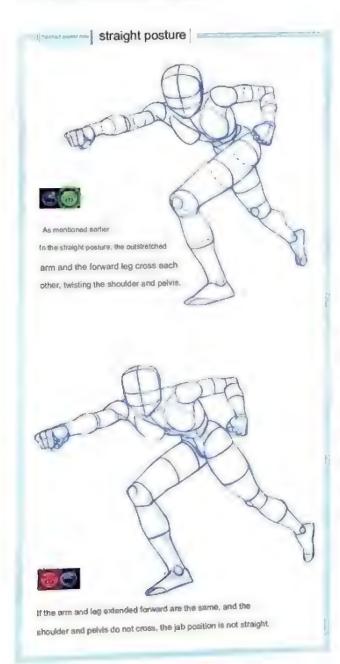


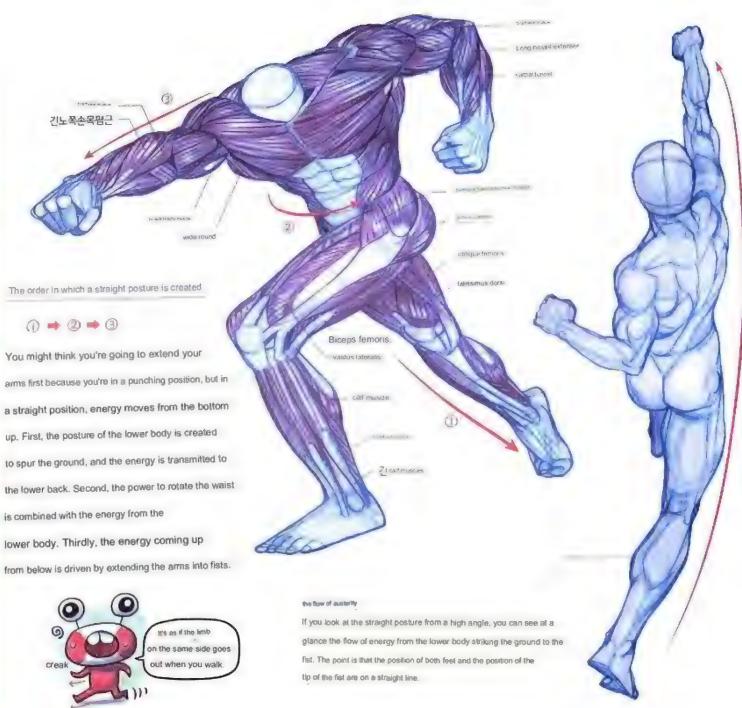


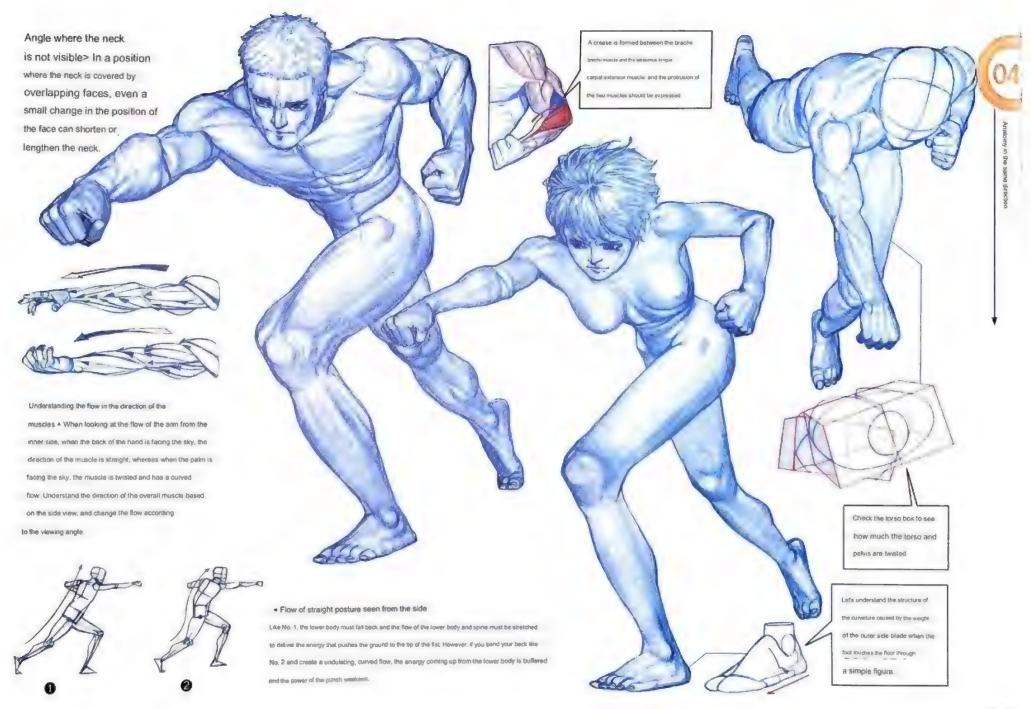




Straight posture seen from the half side

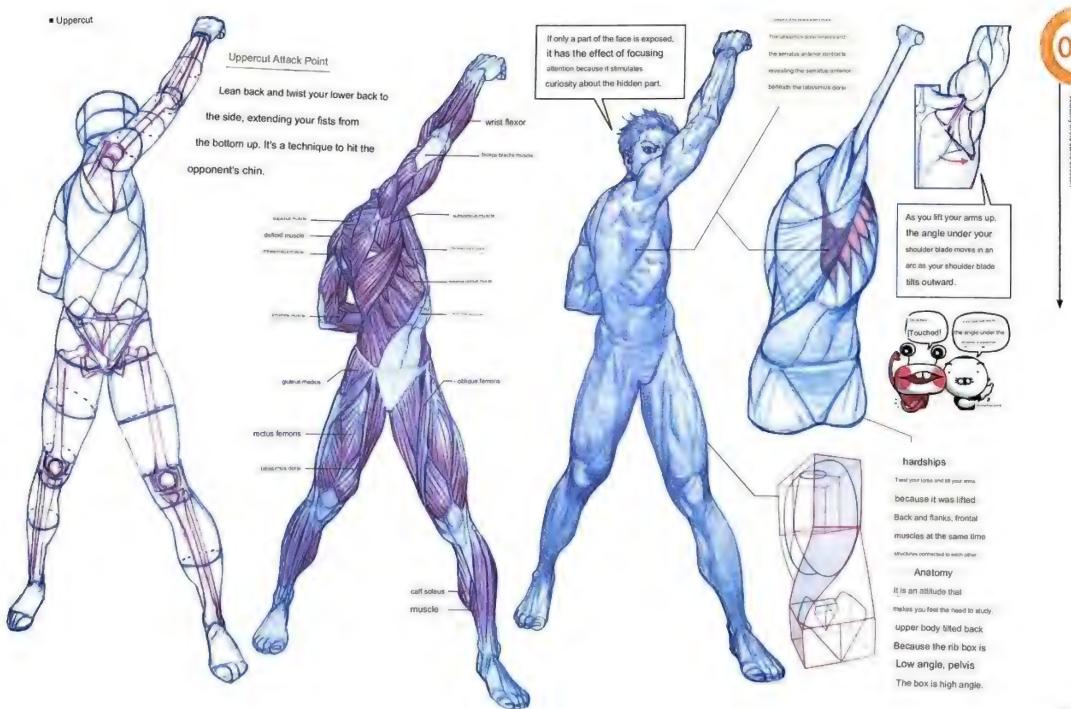


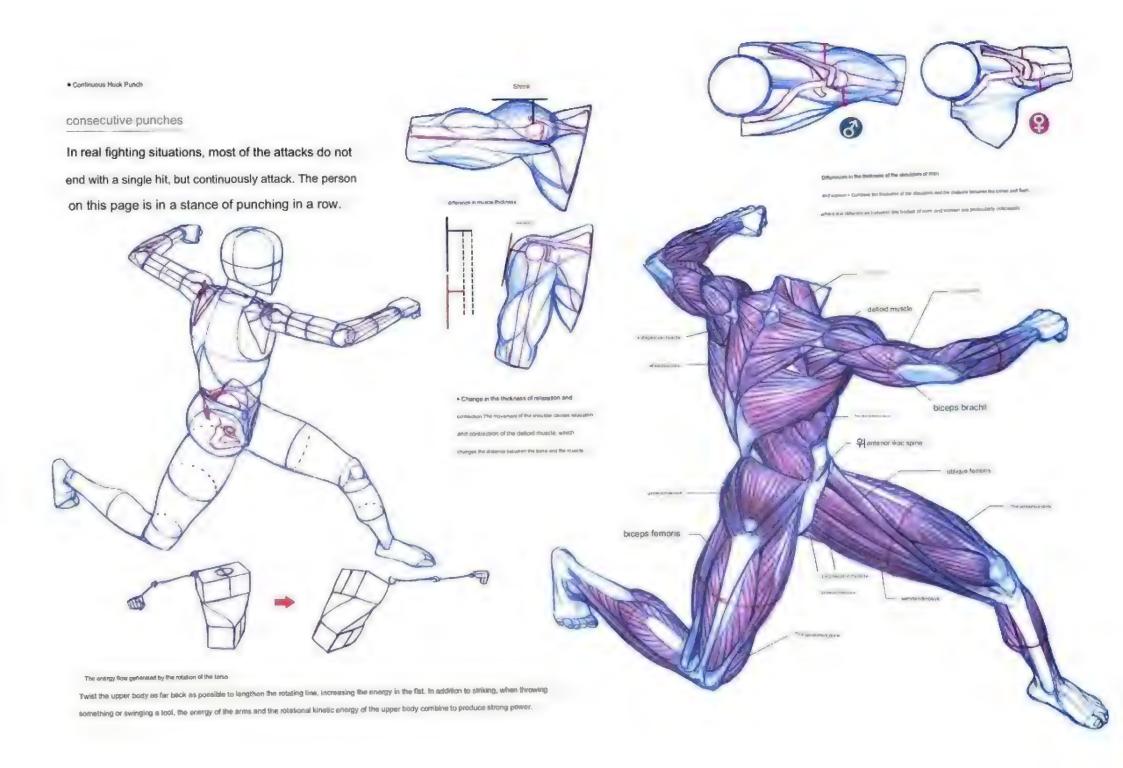














othy un the same direction

* skinny man

A male with underdeveloped muscles has a silhouette similar to that of a female. Because of the low muscle mass, the contours of the ribs create contrast. The thickness of the trapezius muscle is low, so the neck is exposed, and the boundary of the latissamus dorsi muscle is not clear.

The right high a largety grouped into two areas. It does not sinconditionally divide the boundary of the lingt muscle but the area to be spit depends on the angle of view, the direction of light, and whether there is

relaxation or contraction

Pactorals major contraction

brewn me ent

The hook punch position engages the

pectorals major muscle because it swings

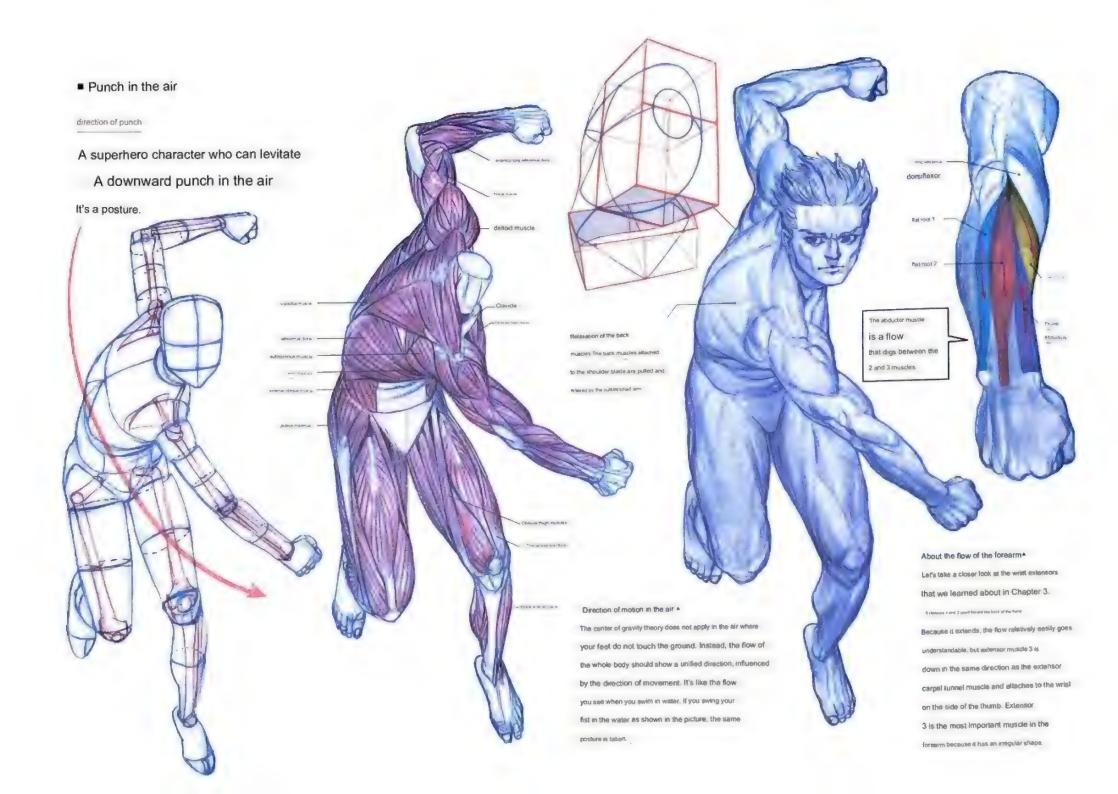
* Féatures of the hook punch

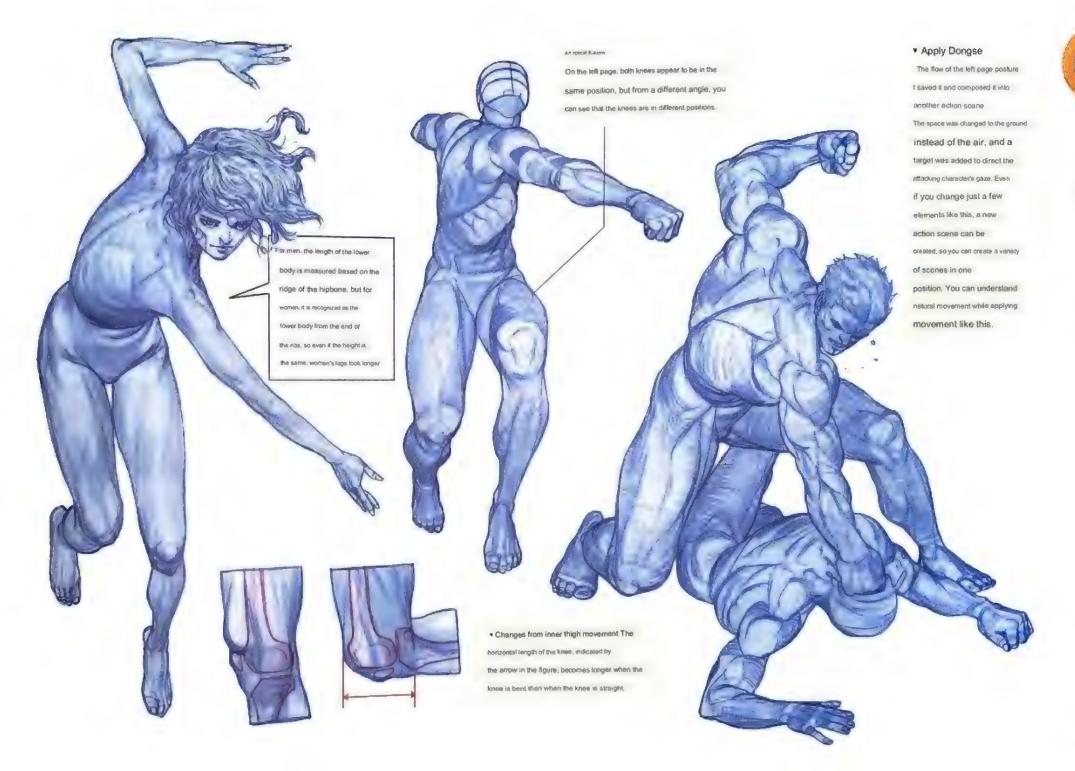
Thock' is a posture in which you swing your fist in a curved line rather than extending it straight toward the opponent like the punching posture you saw earlier. It has more power than straight fists, but it is easier for opponents to defend.

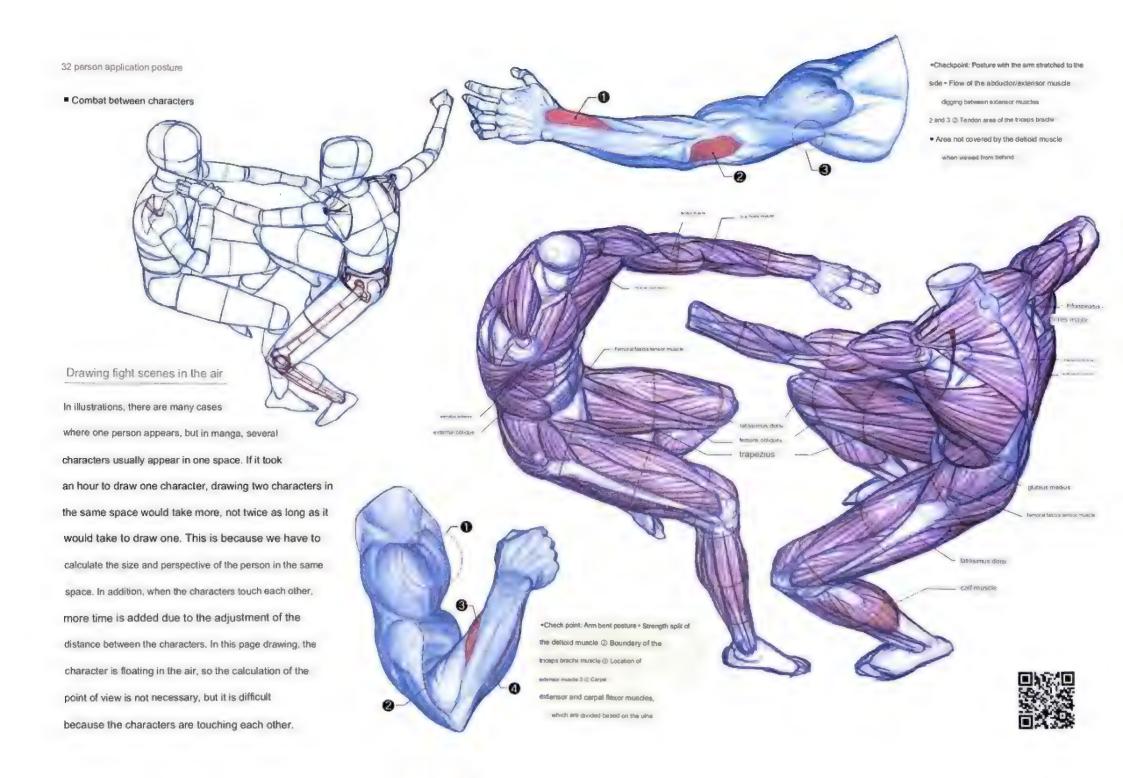


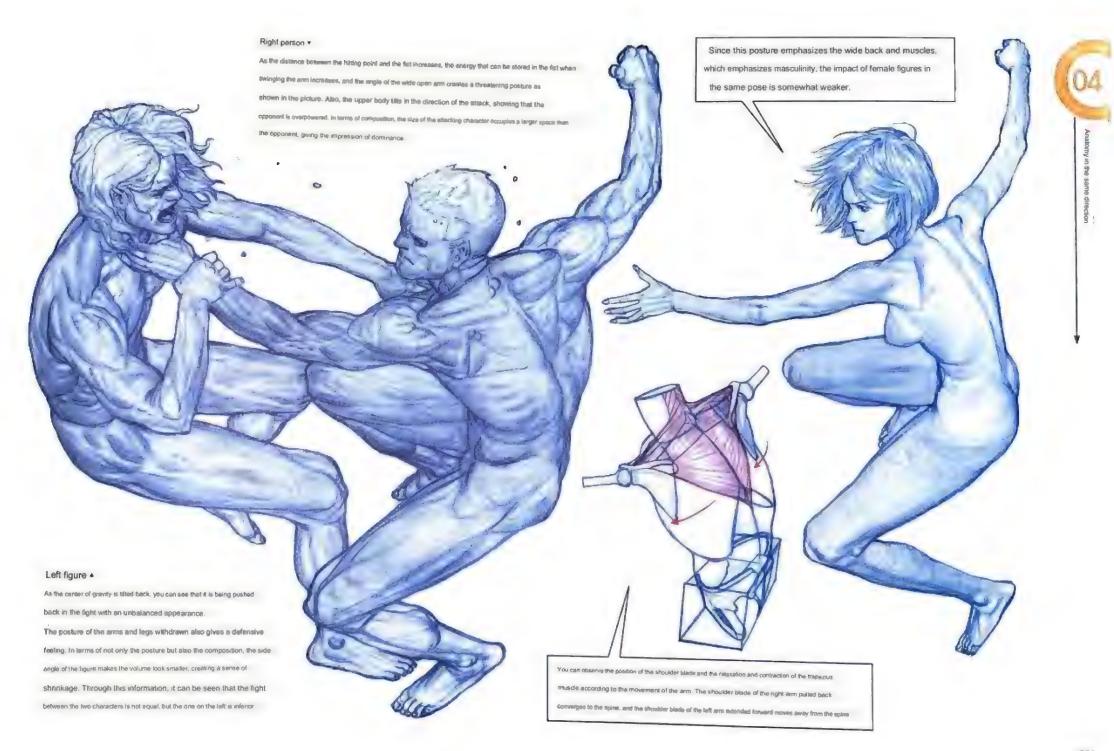
I amprepaing for a series of punches by pulling my left arm back so that the rotation line of my-body is as long

as possible.





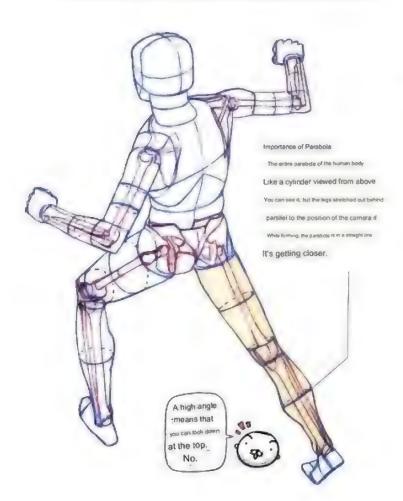


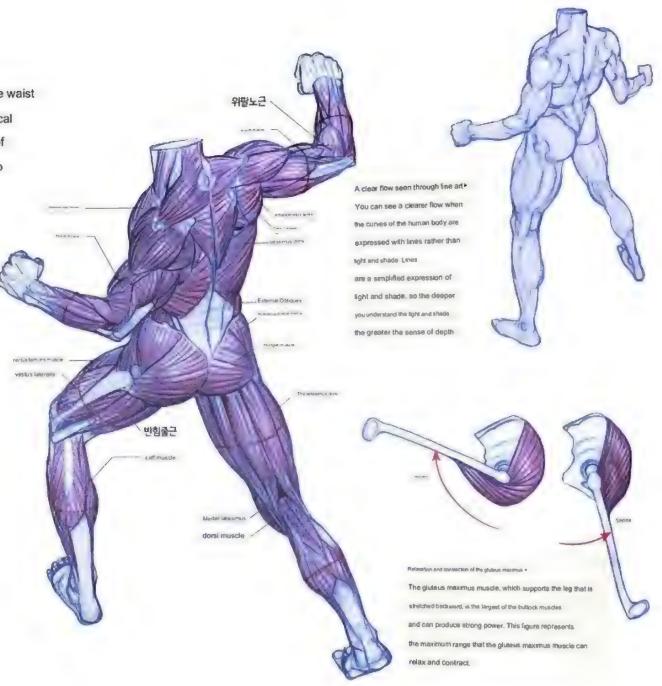


Middle stance of hook punch

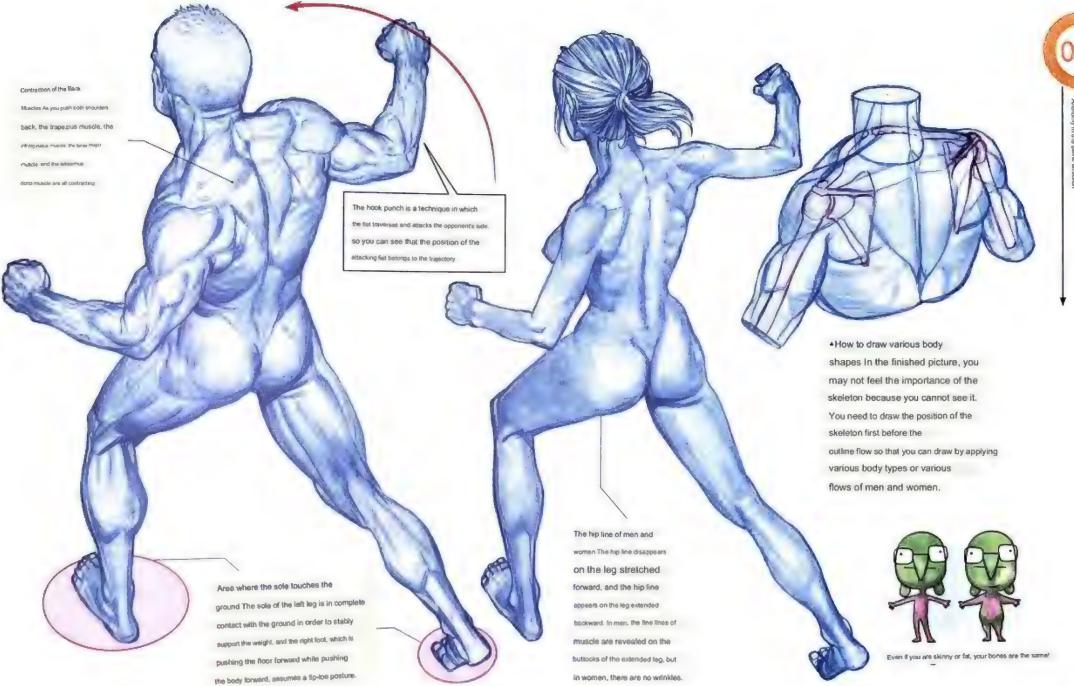
Characteristics of the medium posture of extending the fall

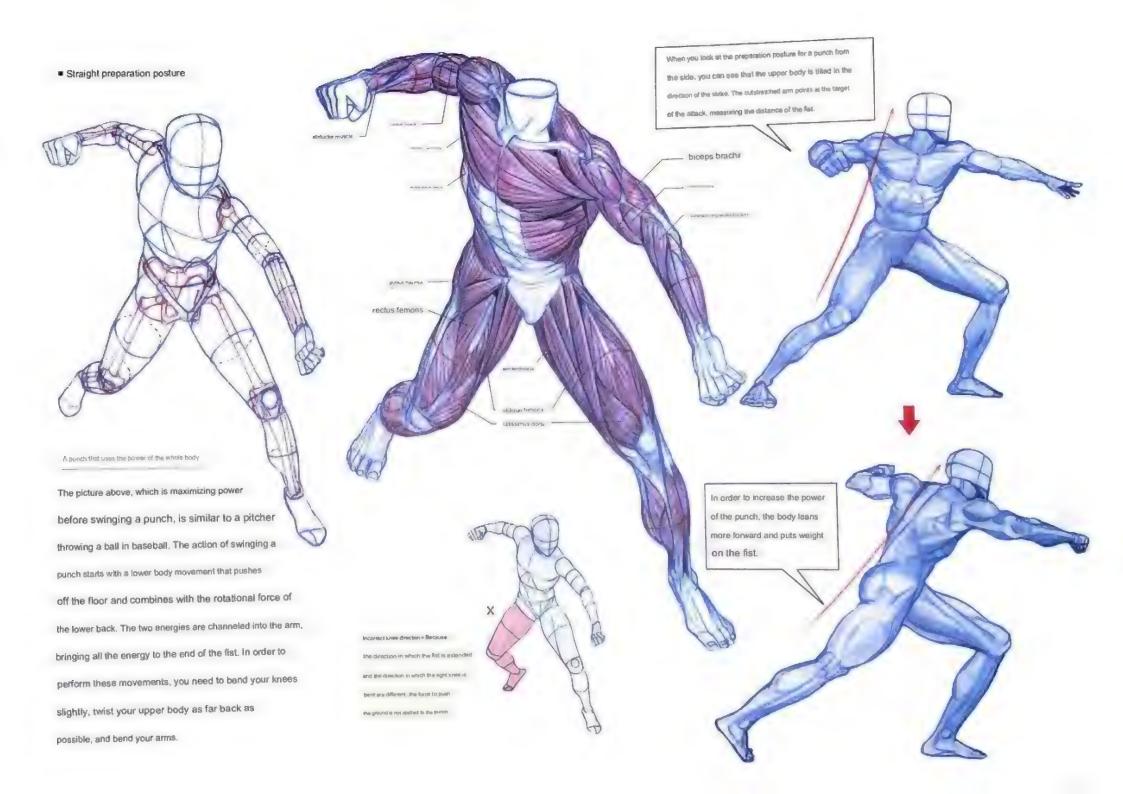
The stances on this page are in the middle of forward rotation of the waist after twisting backwards for a hook punch attack. The almost identical tilt of the shoulders and pelvis tells us that the body is in a state of rotation. The position of the angle is on the back of the character, so you can clearly feel the power of the leg pushing the ground.



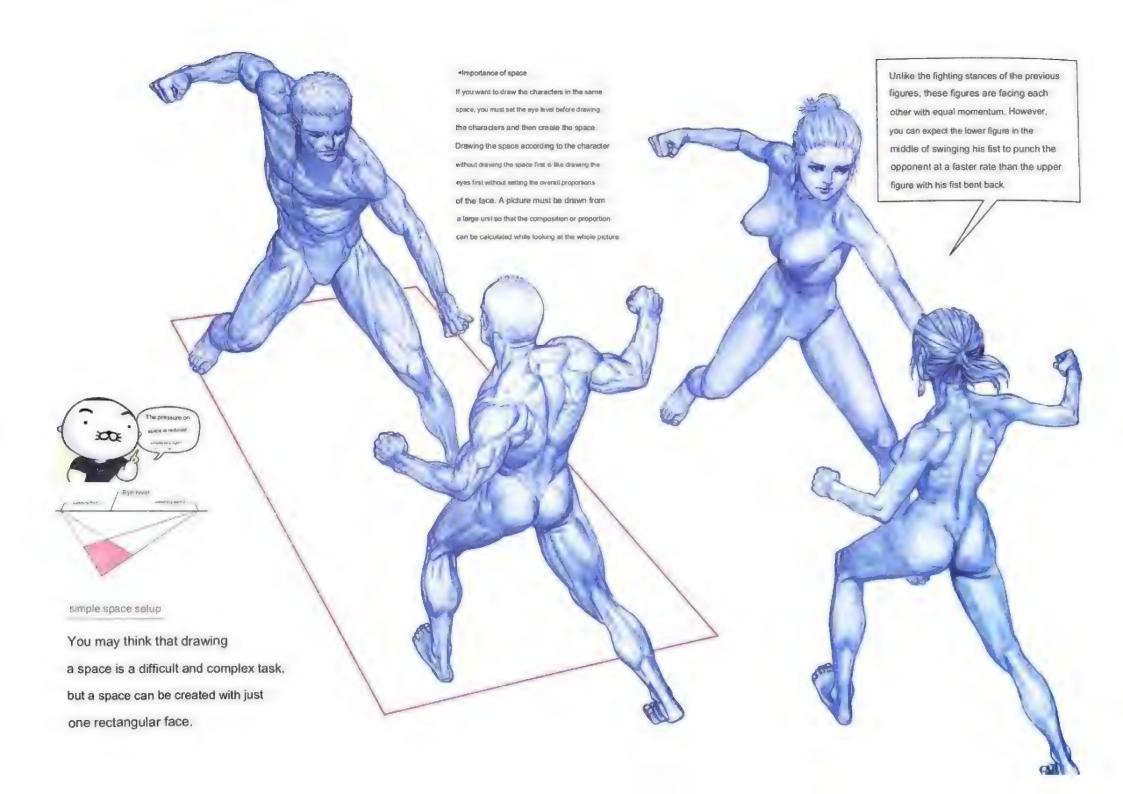


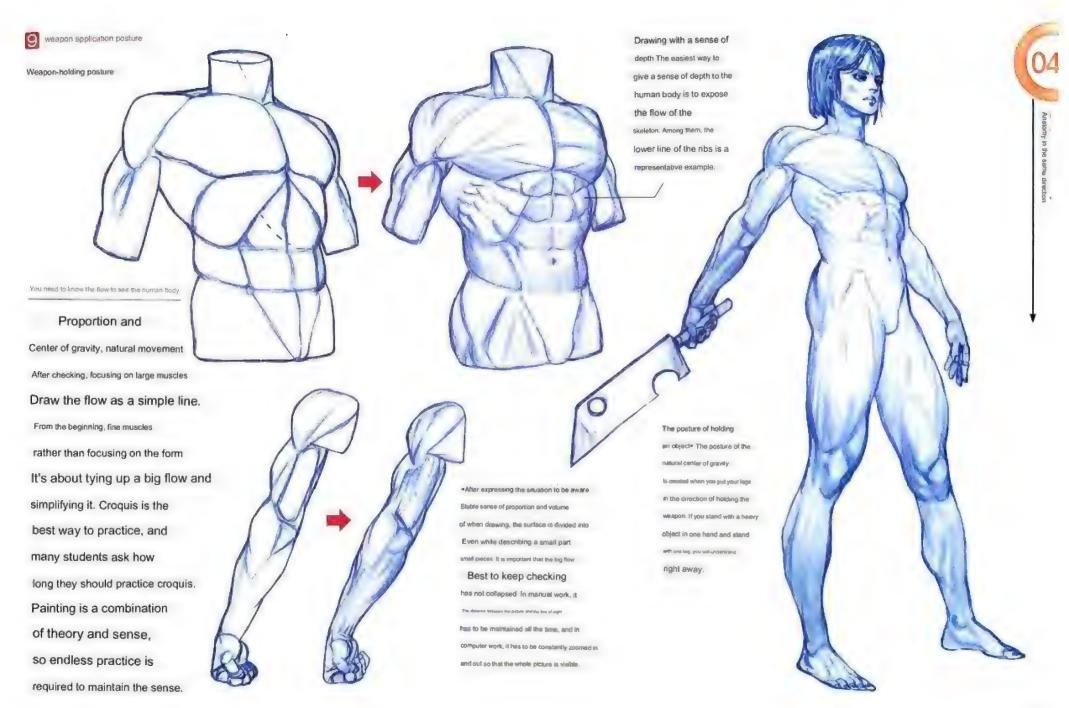












* The posture of drawing a sword from its sheath

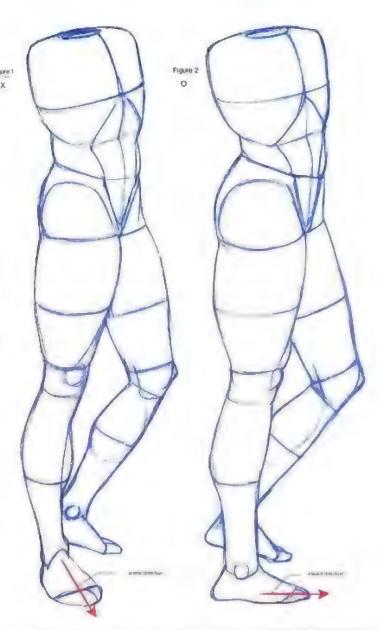
cross-legged posture

Leg fatigue persists evenly on
If you stand in a distributed state
both legs. So when I'm standing, I
usually cross my legs. When
you step on one leg, the pelvis
of the weighted leg rises, and in
response, the shoulder of the same side
lowers to balance. Along with
the slope, the direction of the toe is also
an important point.

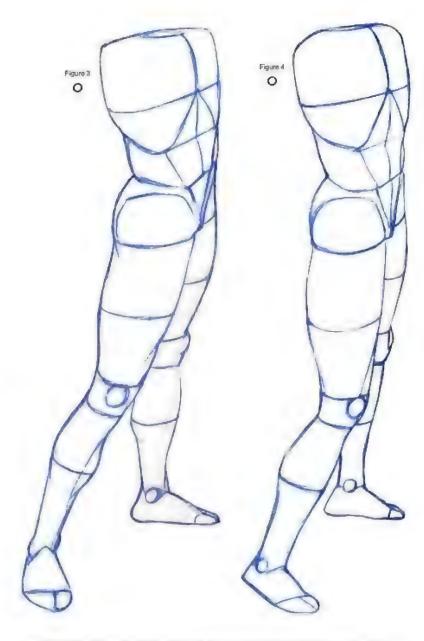
posture of standing on one leg is
divided into several ways. Which
of the following pictures is a
natural posture with legs
crossed? Let's take a look at each one.

Depending on the direction of the toes, the





As shown in Figure 1, if the direction of the tip of the toe on the side of the weight is facing the side, the knee is not fixed and bends. As shown in Figure 2, the direction of the toe should be facing inward so that the knee joint can support the weight stably without bending without straining the log.



If the foot on the weighted side is facing inward, the foot on the unweighted side is not significantly affected by the angle. The important thing is that the toe on which you are carrying the weight should be pointing inward. The posture on the right page is the same as Figure 4.



Holding a sword with one hand

Stance of swinging the sword lightly

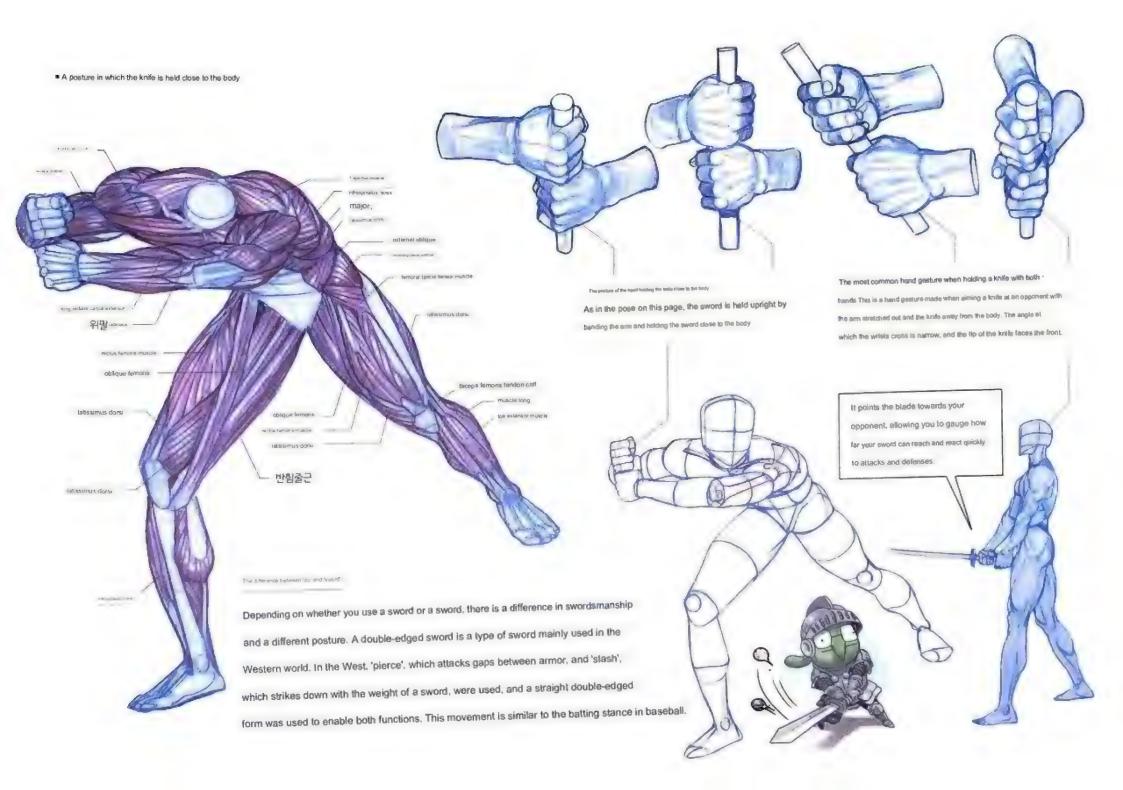
If you look at the state where the body's inclination is not greatly diverged and the knees are not bent, you can see that it is a posture to swing the sword lightly. Next up the intensity

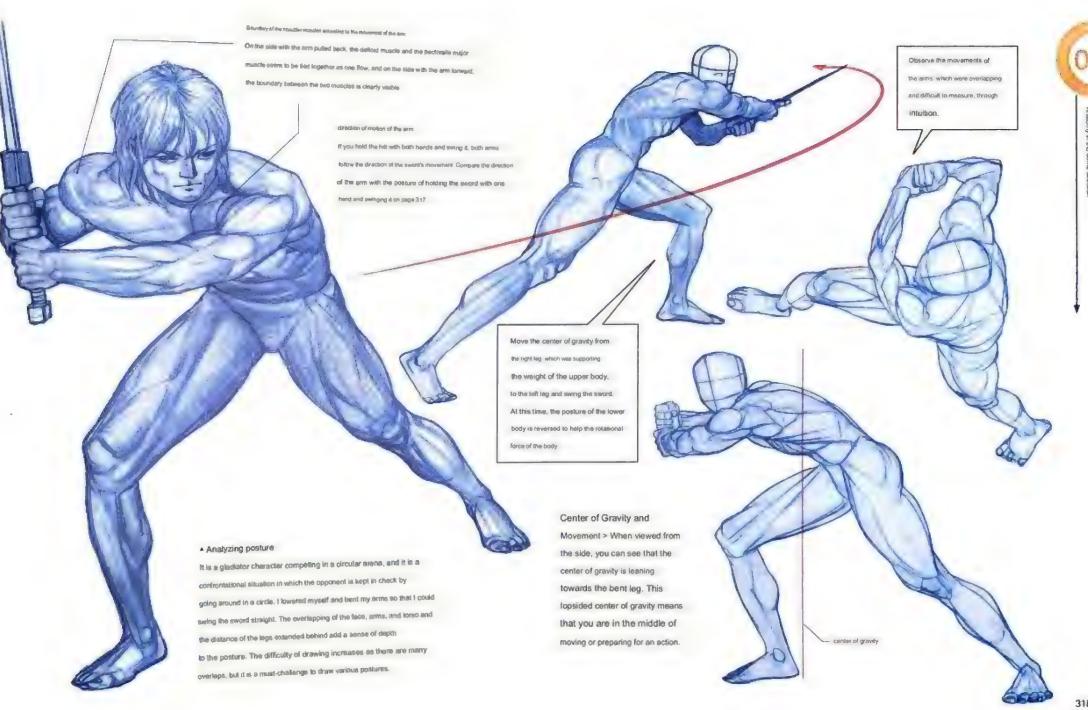
You can infer the strength of the movement.

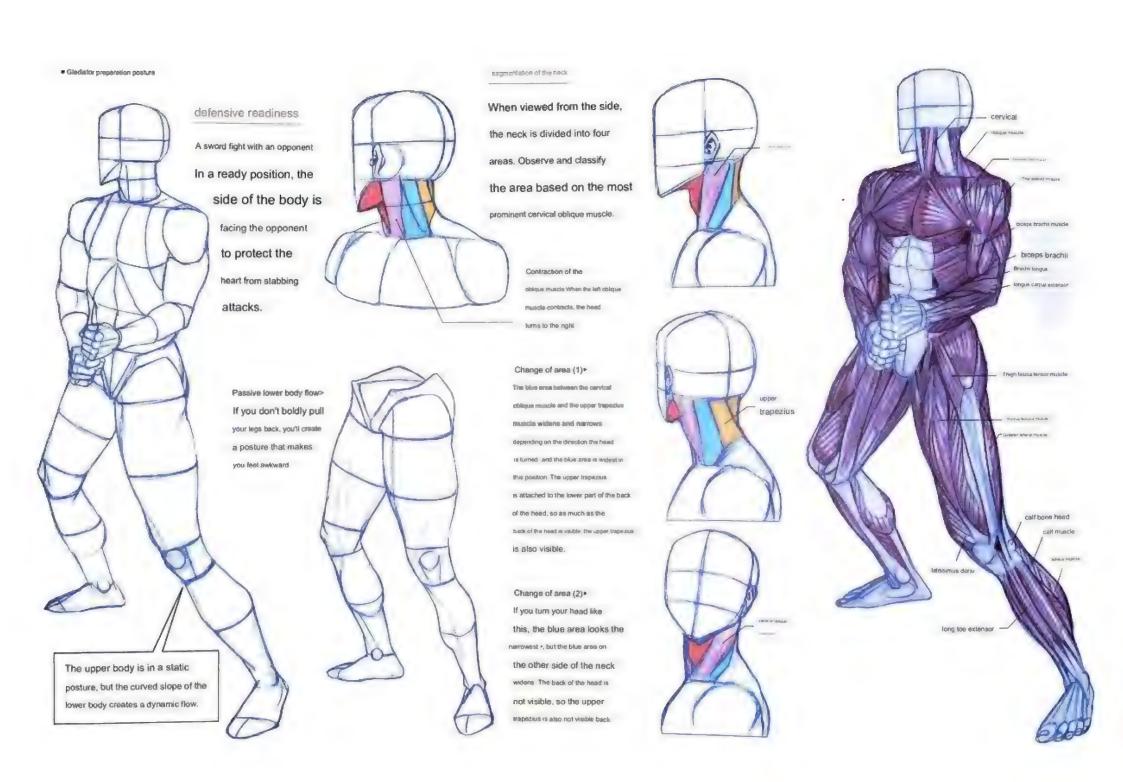


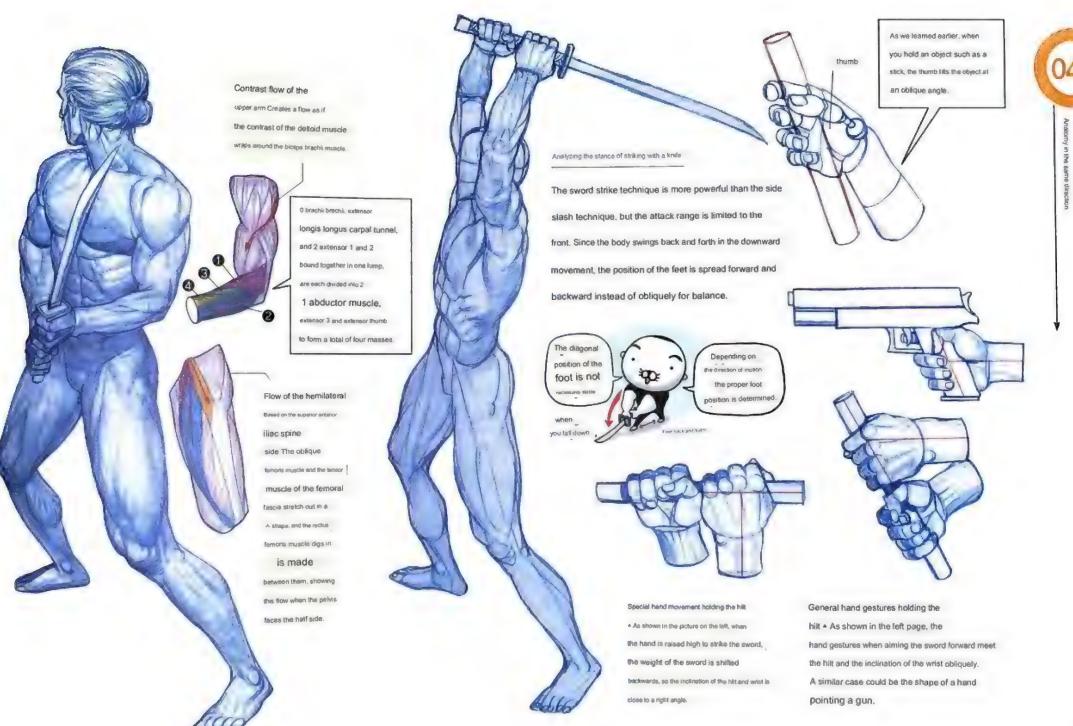


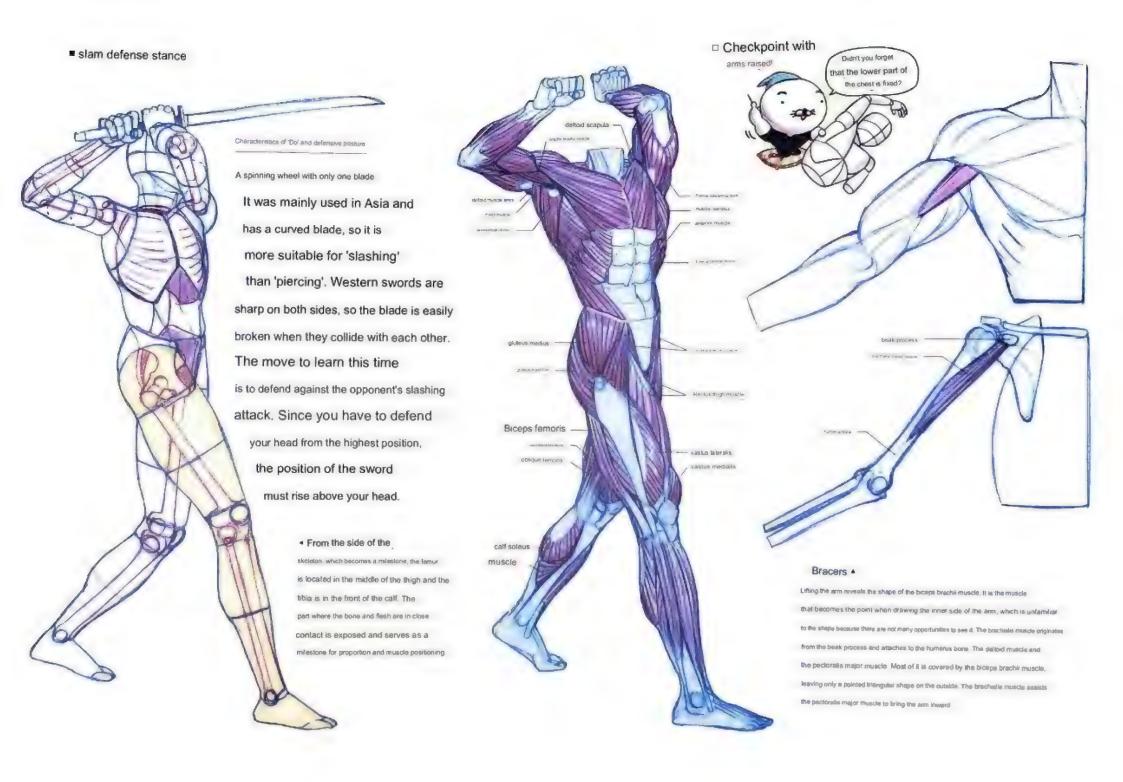


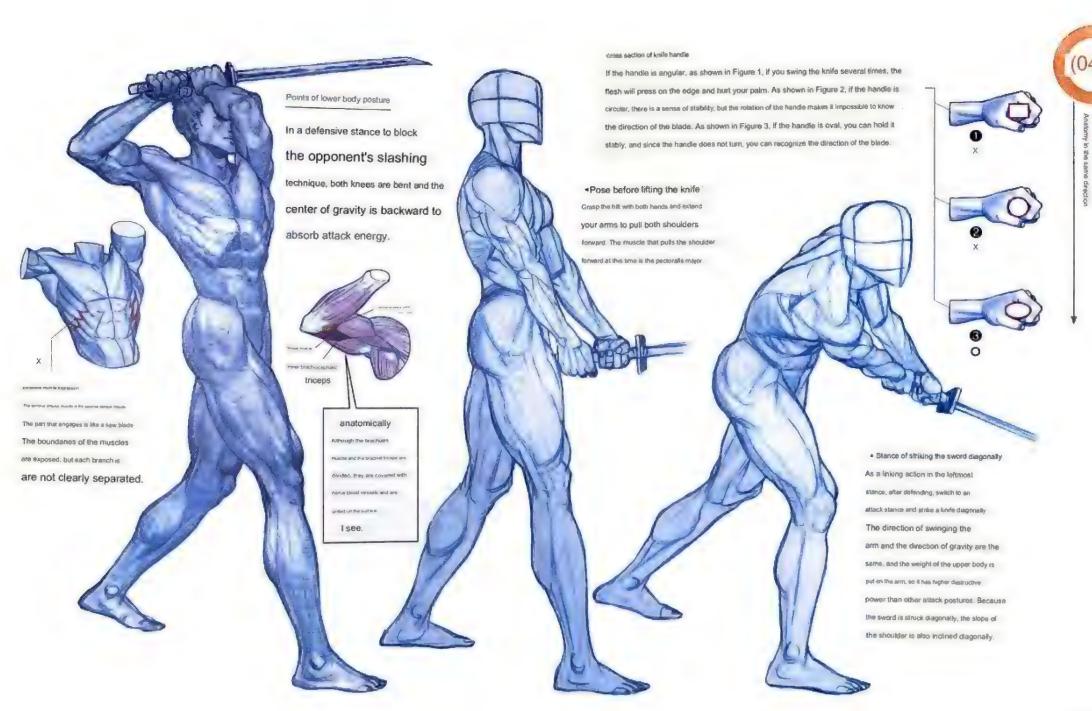








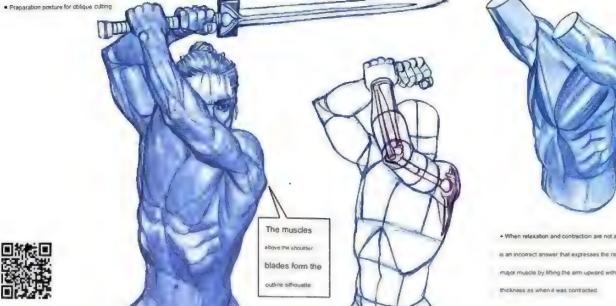












 When relaxation and contraction are not applied, this. as an incorrect answer that expresses the relaxed pectoralis major muscle by lifting the arm upward with the same



v(ppper body posture storoutsately effect five diagonal state $\frac{1}{2}$

When striking the knife with an oblique slash, one arm is pulled forward and the other arm is pulled back, tilting the shoulder, in this angle, you need to locate the clavicle to save the area of the pectoralis major muscle.

. When I didn't think of the skeleton If the flow of the ribs, which is accombatted by the movement of the upper body leaning back, is not expressed, the sense of depth of the torso will disappear and tension will not be felt in the posture.

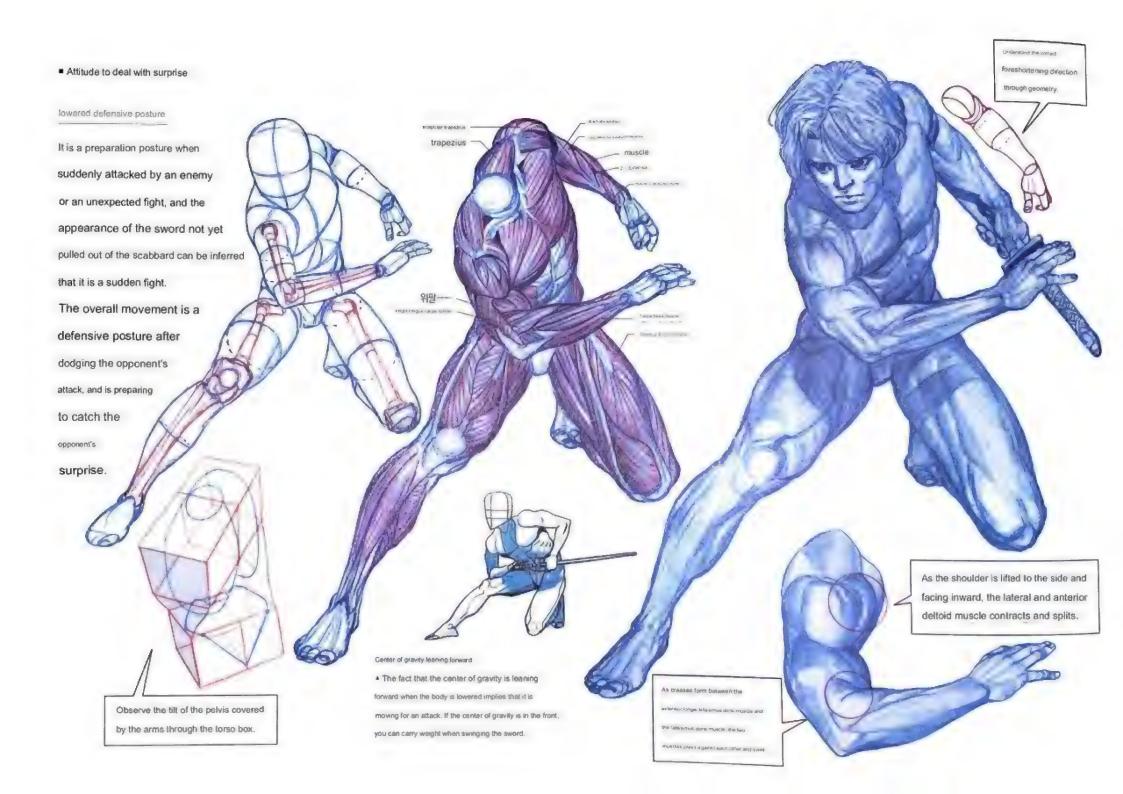
The direction of the sword is facing backwards,

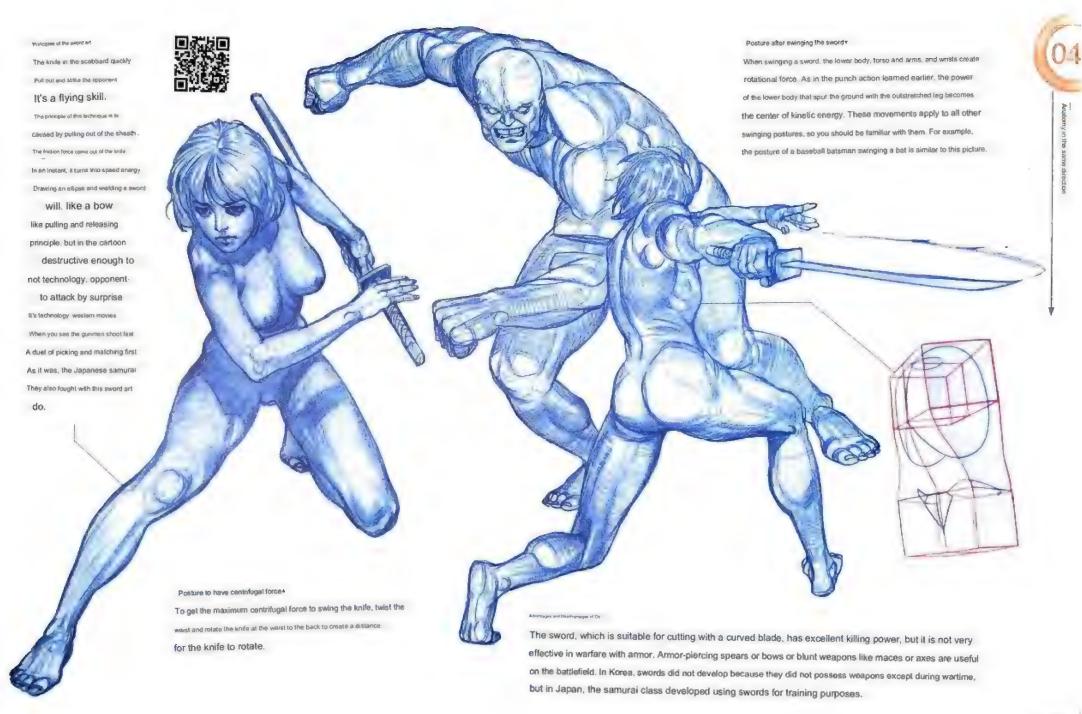
indicating that it is in preparation for attack, not defense.

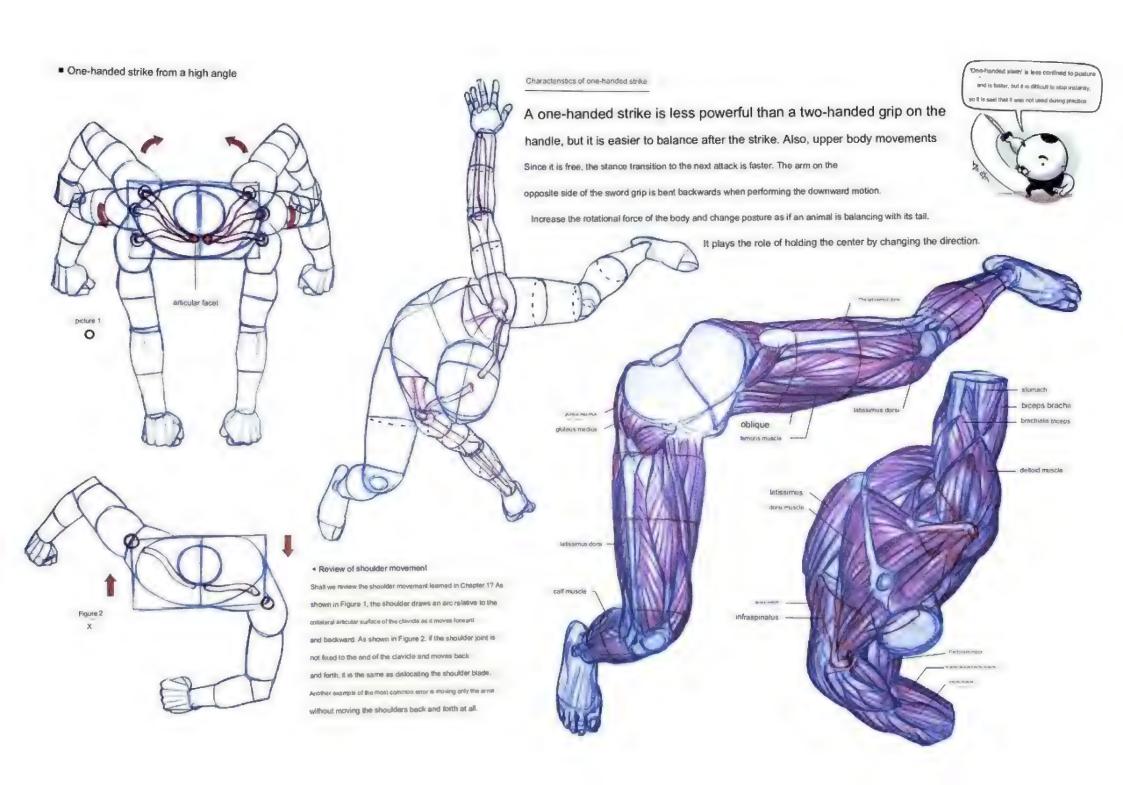
The direction of the lasts for steamer outing

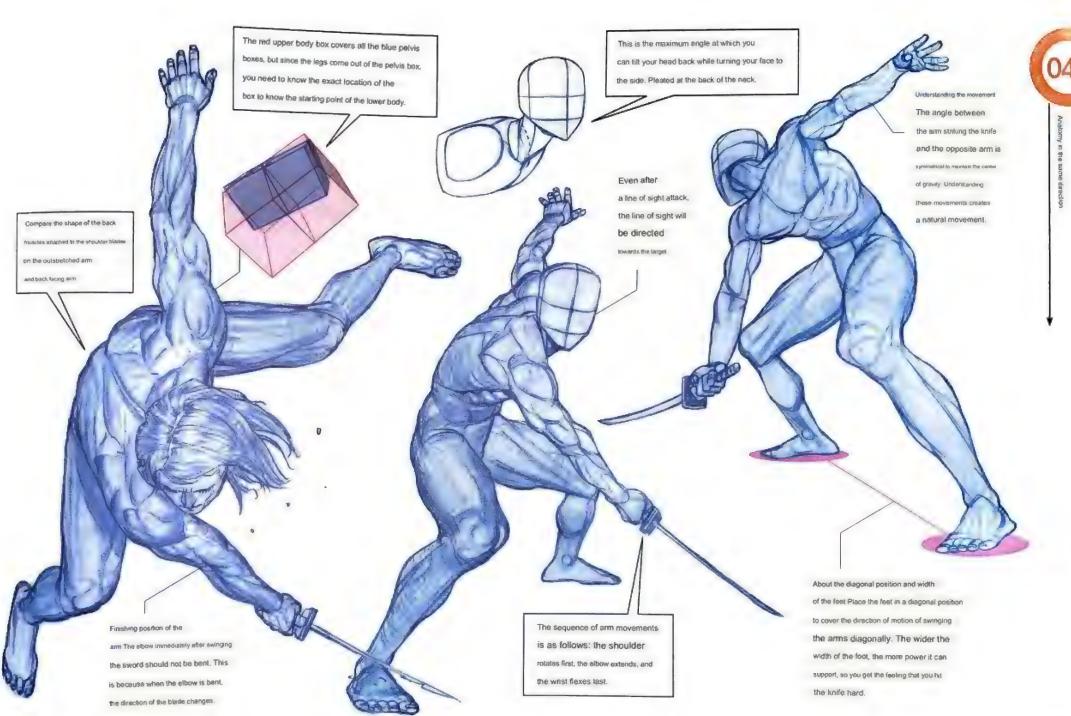
I can tell. In addition, the direction of the knife raised to perform diagonal cuts is turned to the side, and the position of both feet is located diagonally. The direction of the knife is bent to the side to increase the rotational force by increasing

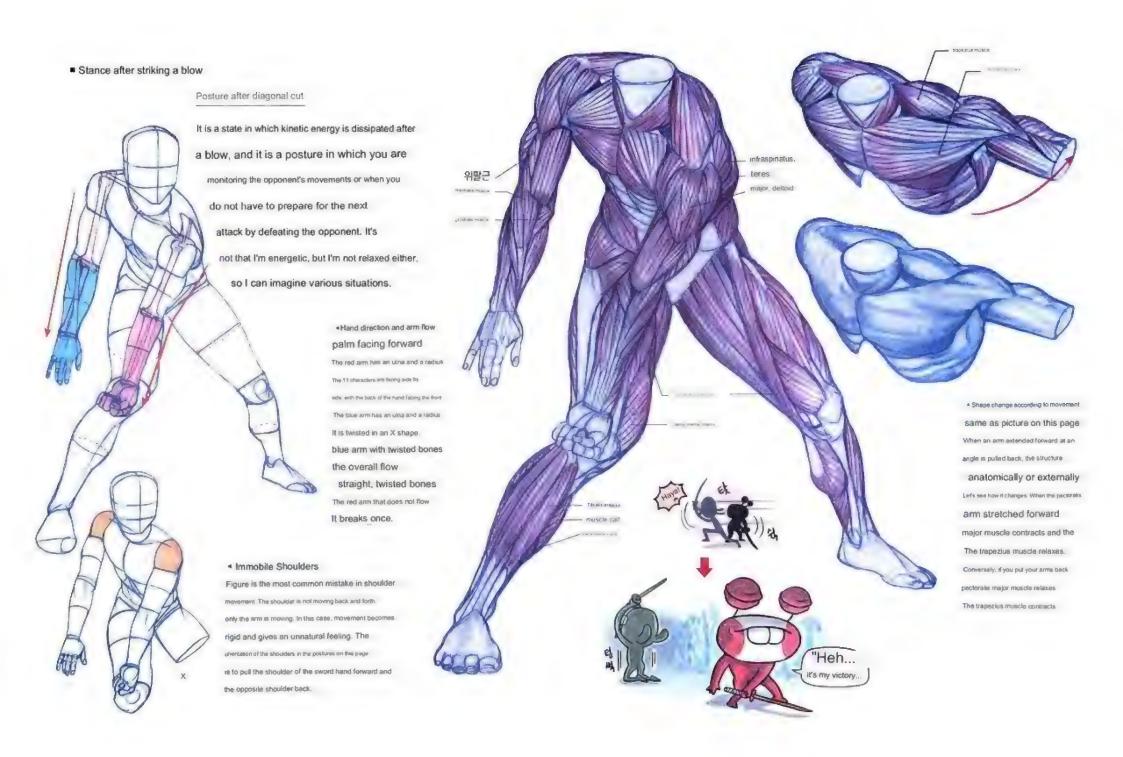
the length of the knife's movement.



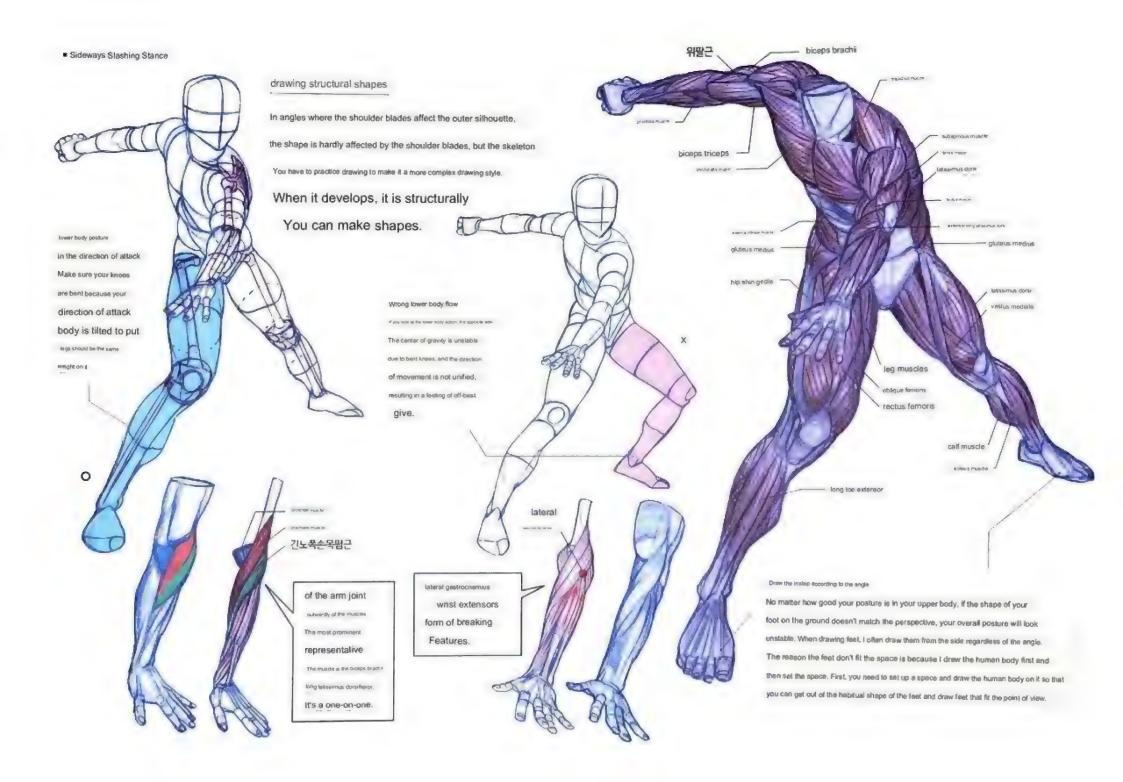


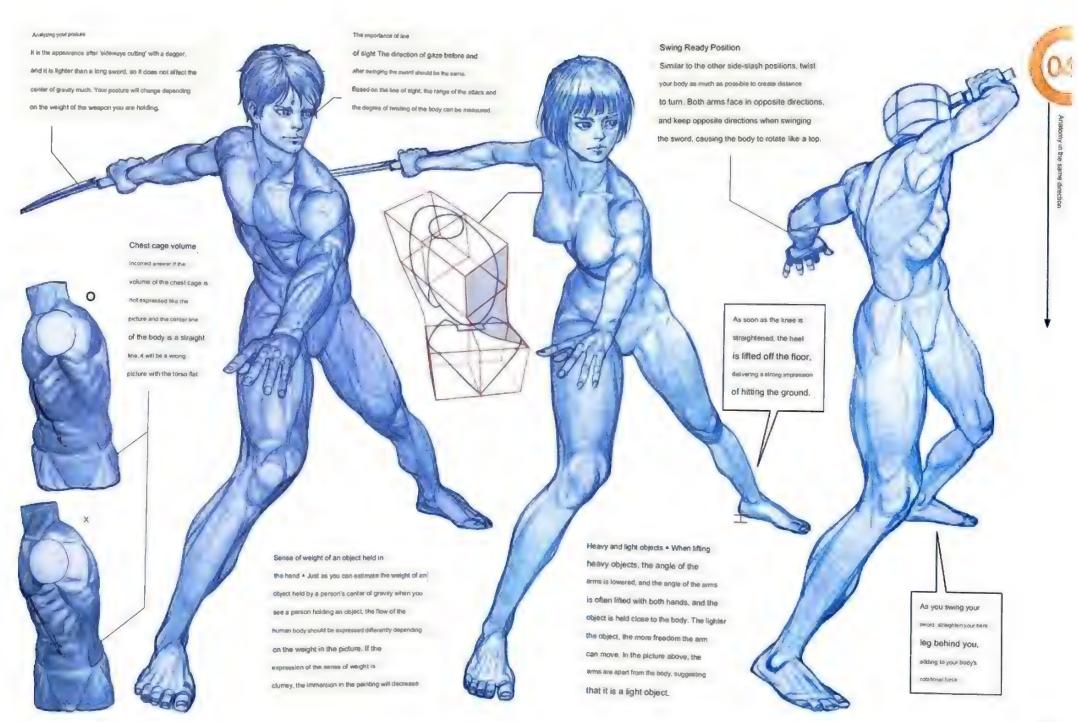


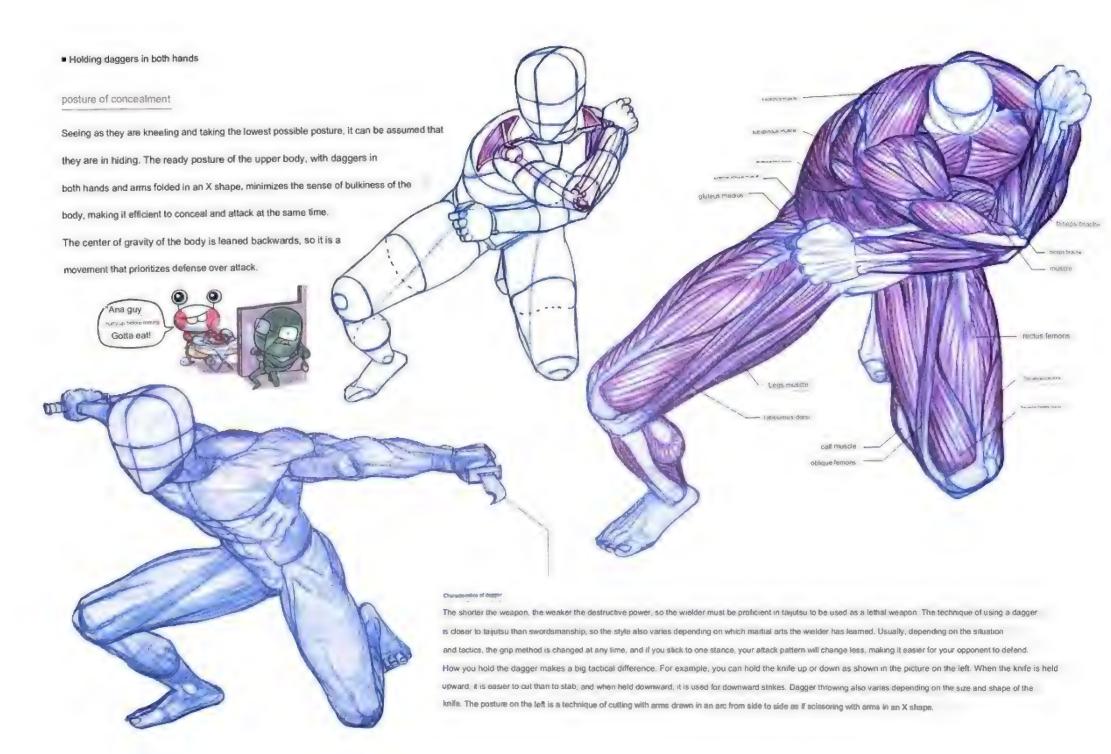










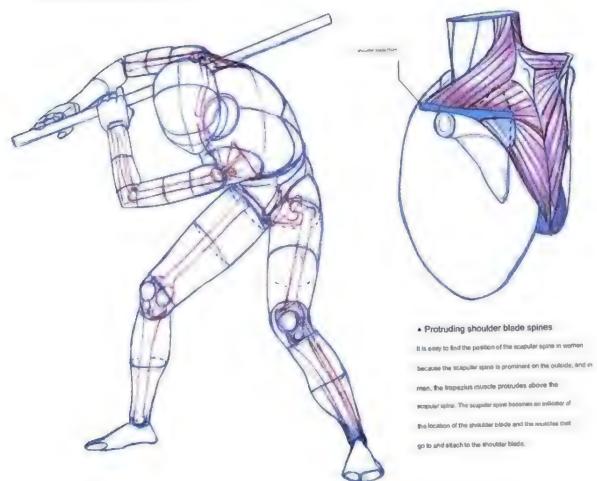


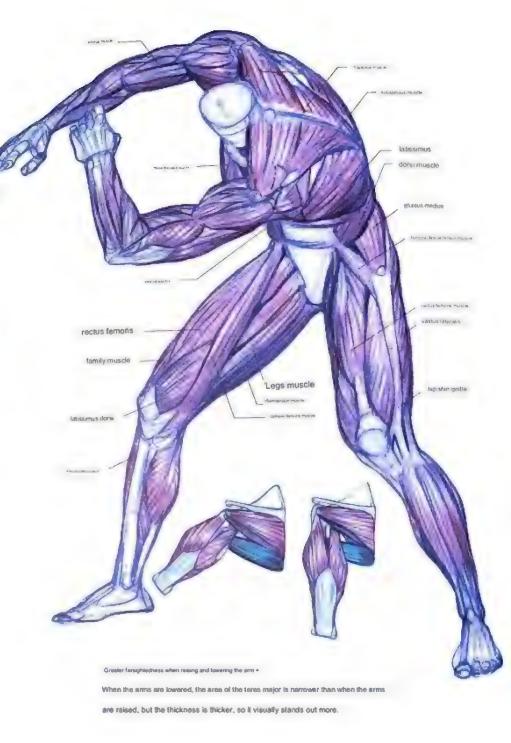


The posture of holding the bar (1)

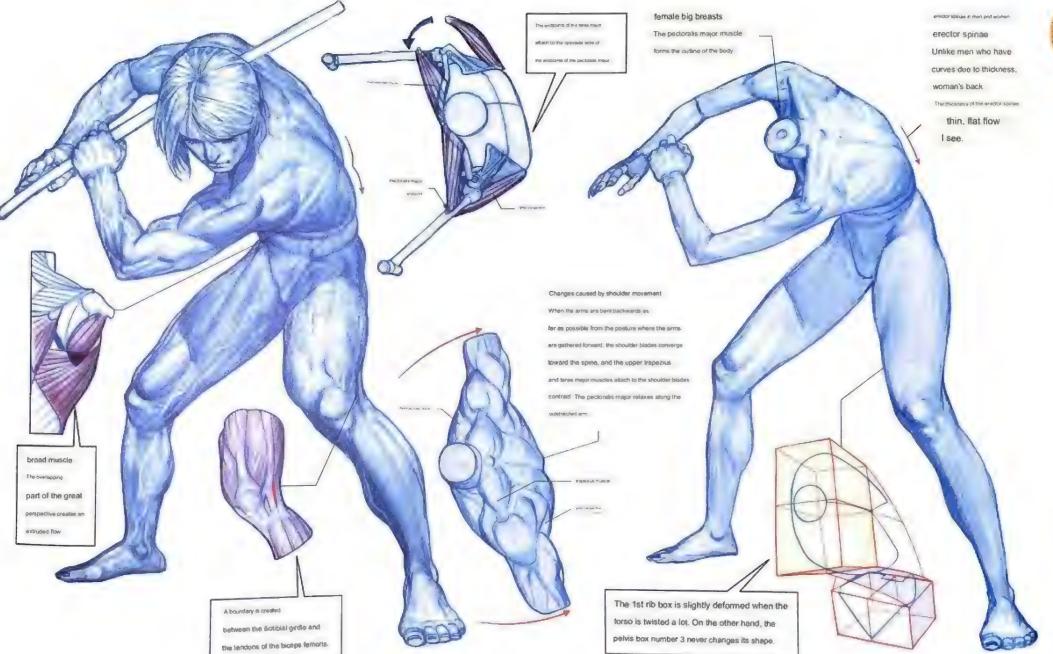
Posteral Analysis and Origins of Bengjutsu

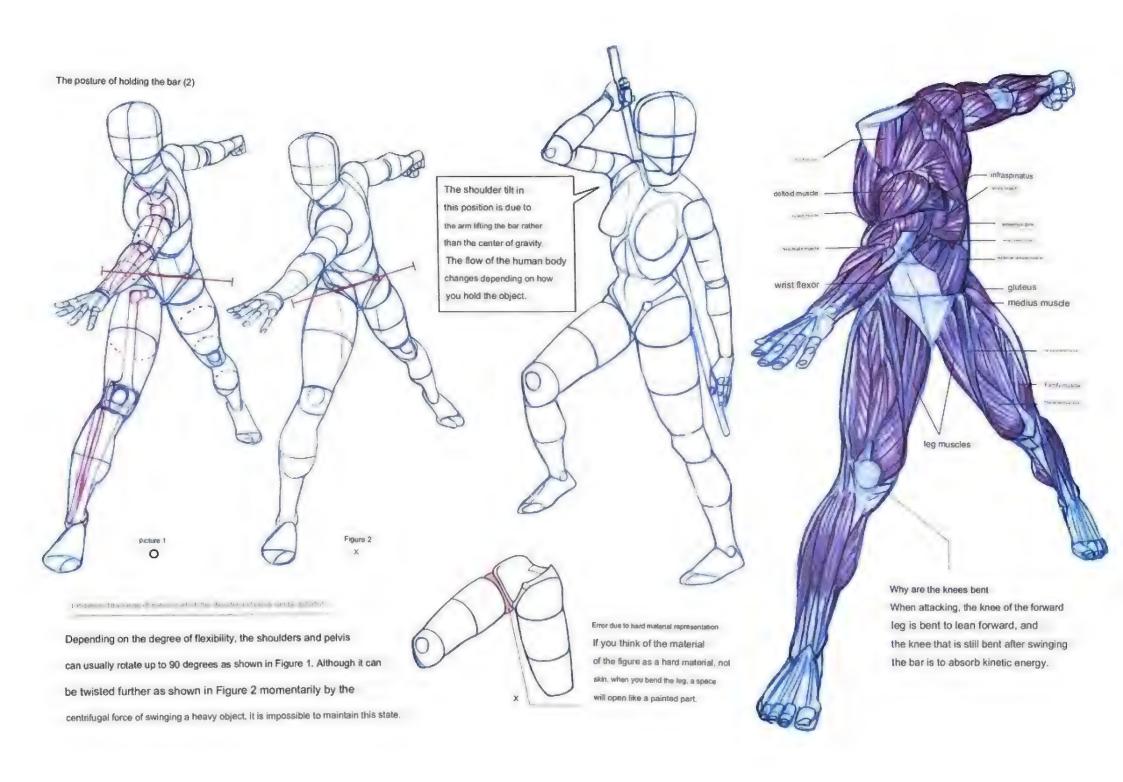
This position is in preparation for spinning or swinging the bar, and with a slight upper body erection, it is very similar to the preparation position a baseball batter takes before swinging a bat. It rotates a long rod to attack and defend with its rotational power, and also has the effect of disturbing the opponent. Bongsul is a defense-oriented skill that blocks the opponent's attack. Usually, they practice with a stick, and in actual combat, they engage in war with only a blade inserted. The spear was the most used weapon, as even untrained soldiers could use a simple thrusting attack at an approaching enemy.





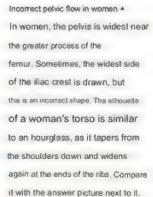




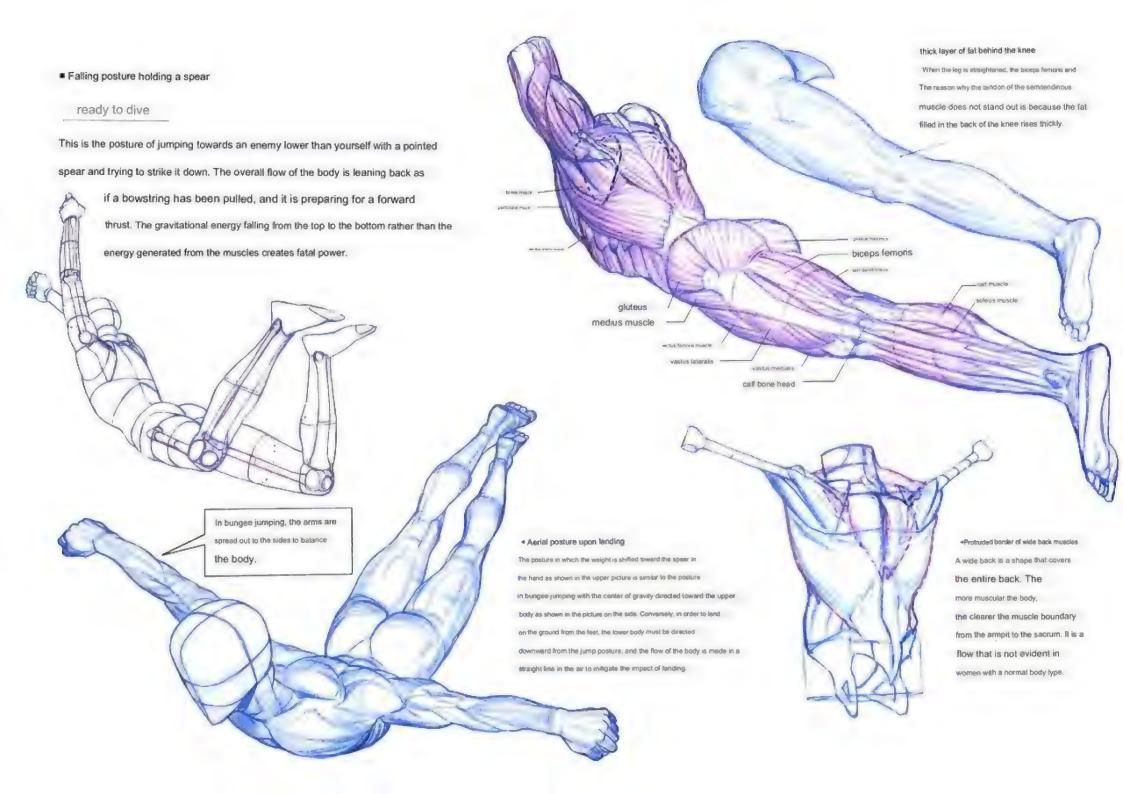




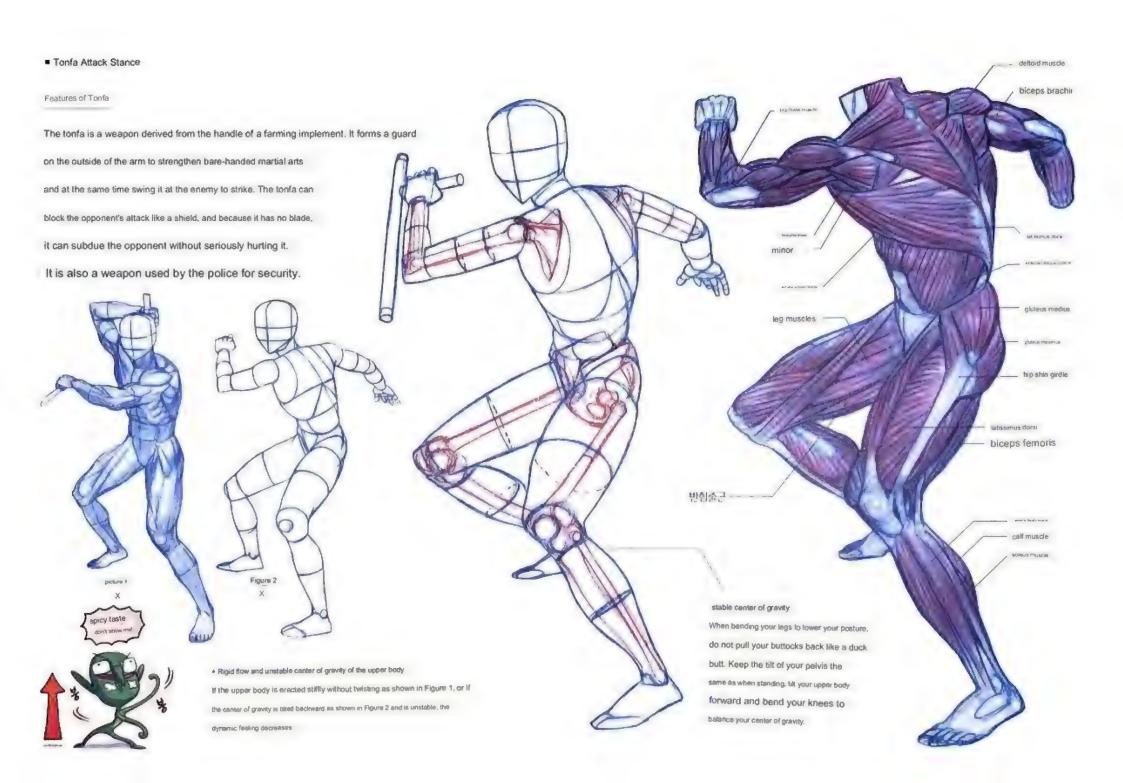




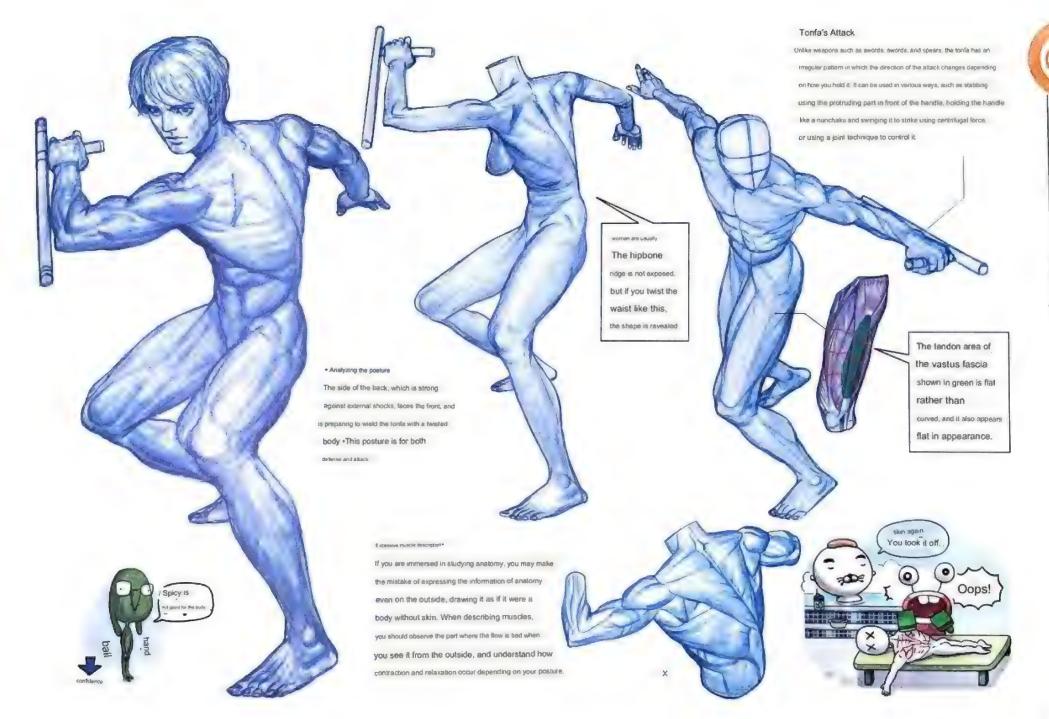
lliac ridge femoral

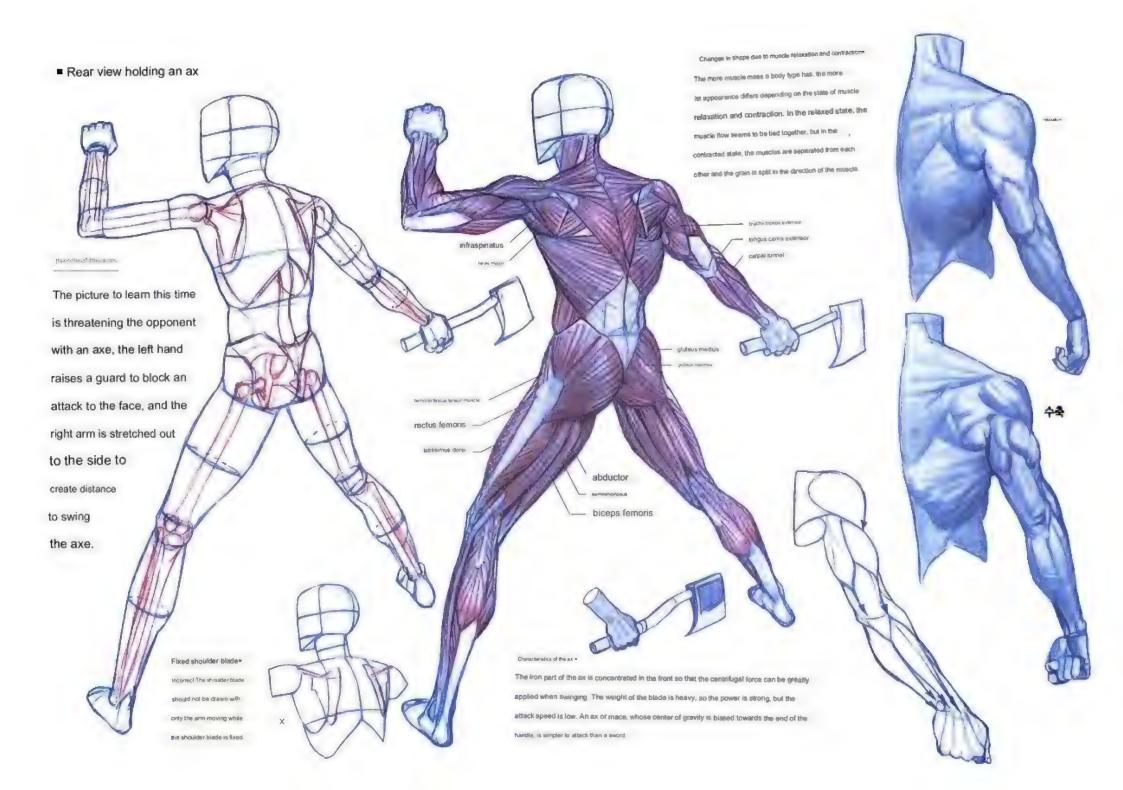


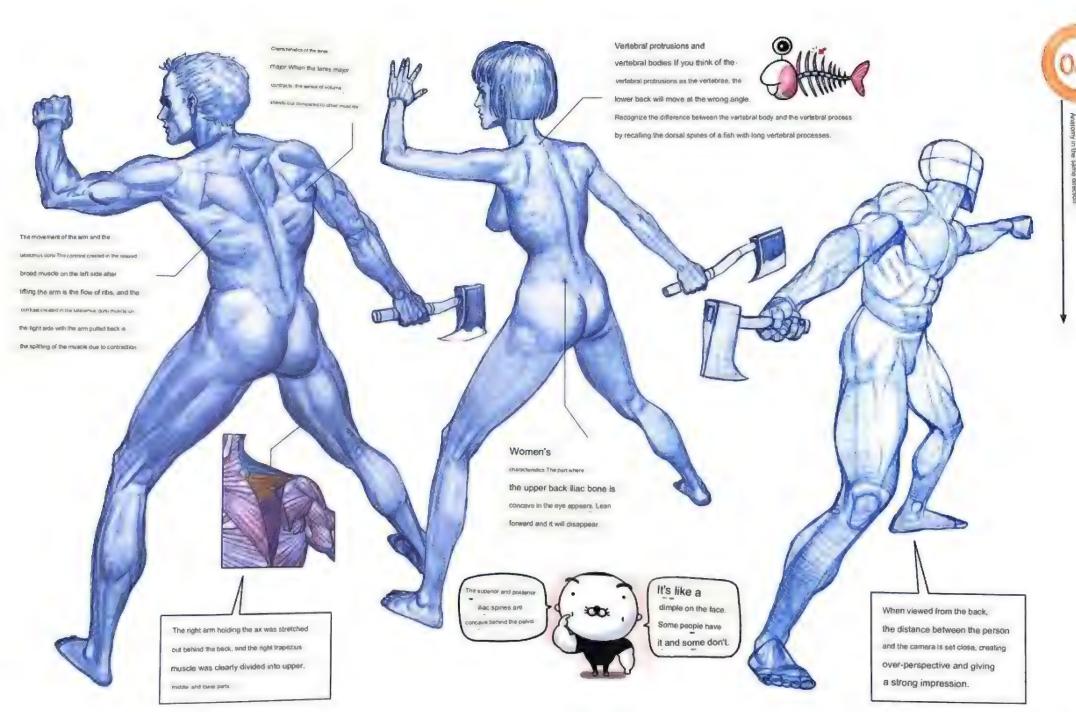


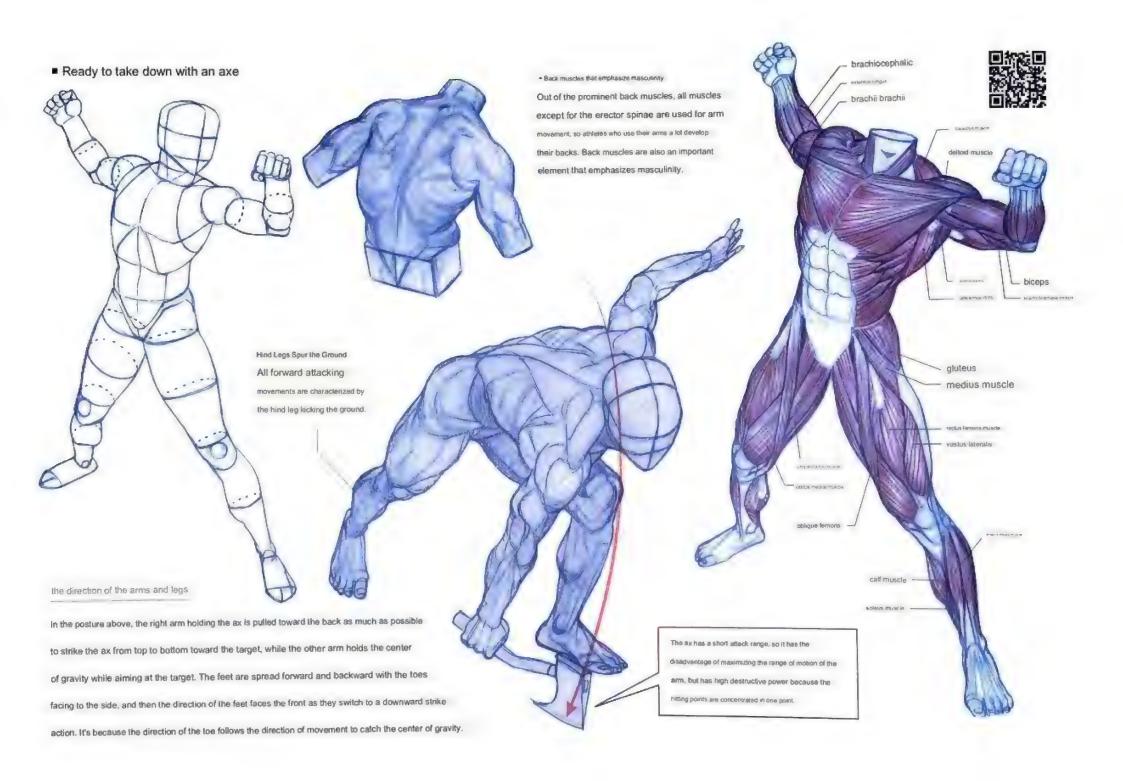


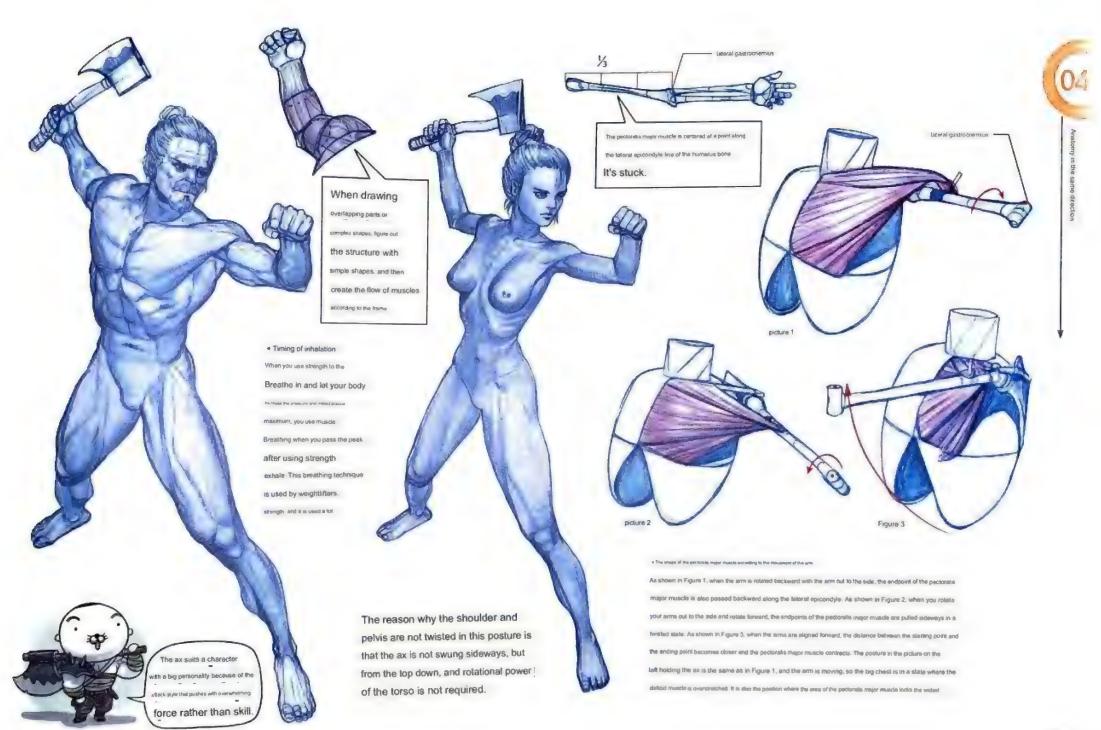


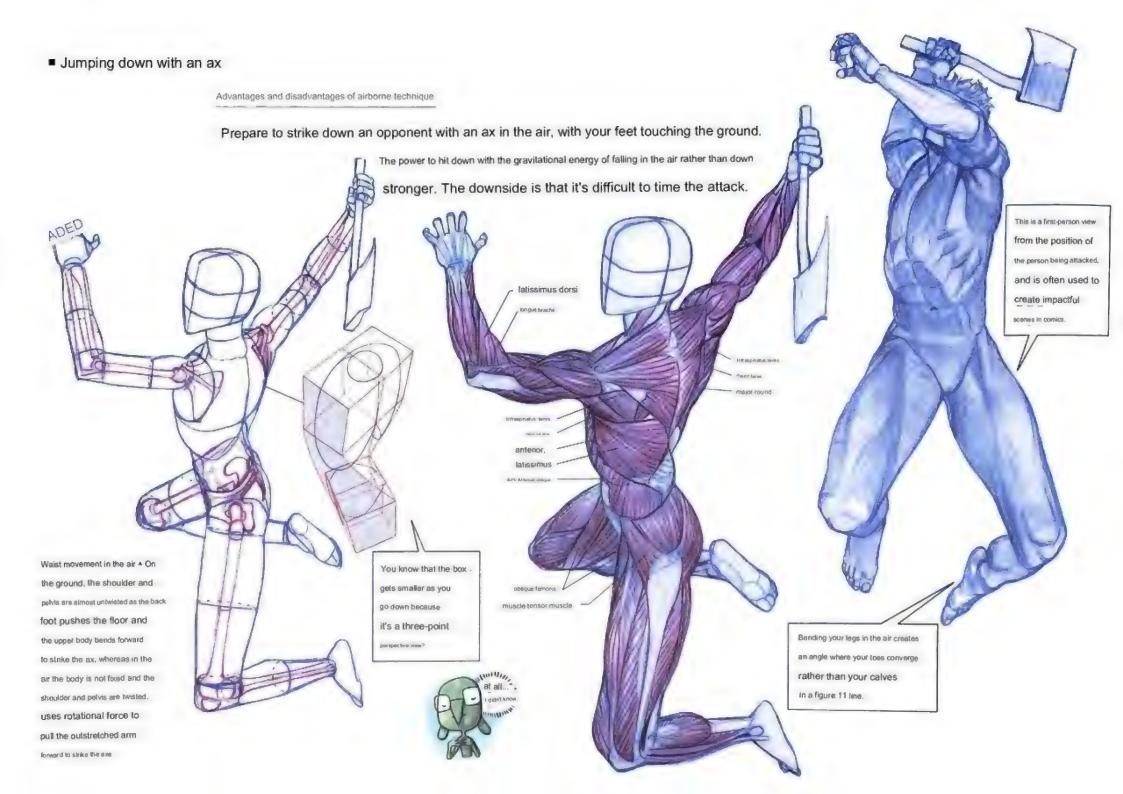














Analyzing the connection motion When the ax is hill, the upper body routes so that the front side of the body can be seen in the preparation motion - where the back was visible. The reason why the knees are bent after hitting is to prevent the legs from touching the opponent when striking with

the are. Try to understand movement

through these series of postures.

The clavicle and pectoralis major muscle peeking out beyond the trapezius add detail to the picture. If you learn to draw only with flow, you may miss these eternants. If you express detailed structures through anatomy study, a three-dimensional effect is formed in the human body.

Floating hair is important information that tells you that the character is jumping and falling.

The serratus antenor

muscle which helps the arm

to stretch forward, cortracts and the shape appears on the outside.

The role of the

propoller is turning

Pectoralis

auxiliary arm The arm raised in front balances the weight of the opposes arm holding the axe, and when striking the axe, it adds rotational force to the torso as if a

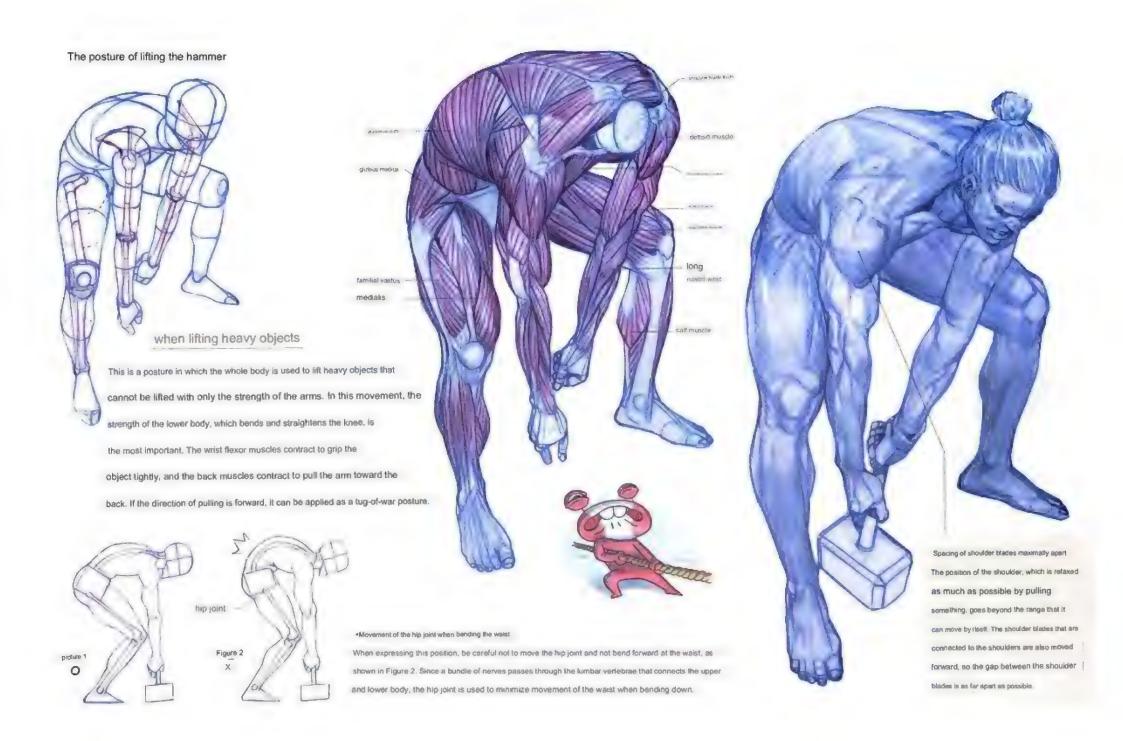
Contraction of the fascia tensor muscle >

Because the thigh is lifted
up, the femoral fascia tensor
muscle contracts
and is clearly visible on the
outside Life the brachi muscle
of the arm, the shape
looks prominent, and when the

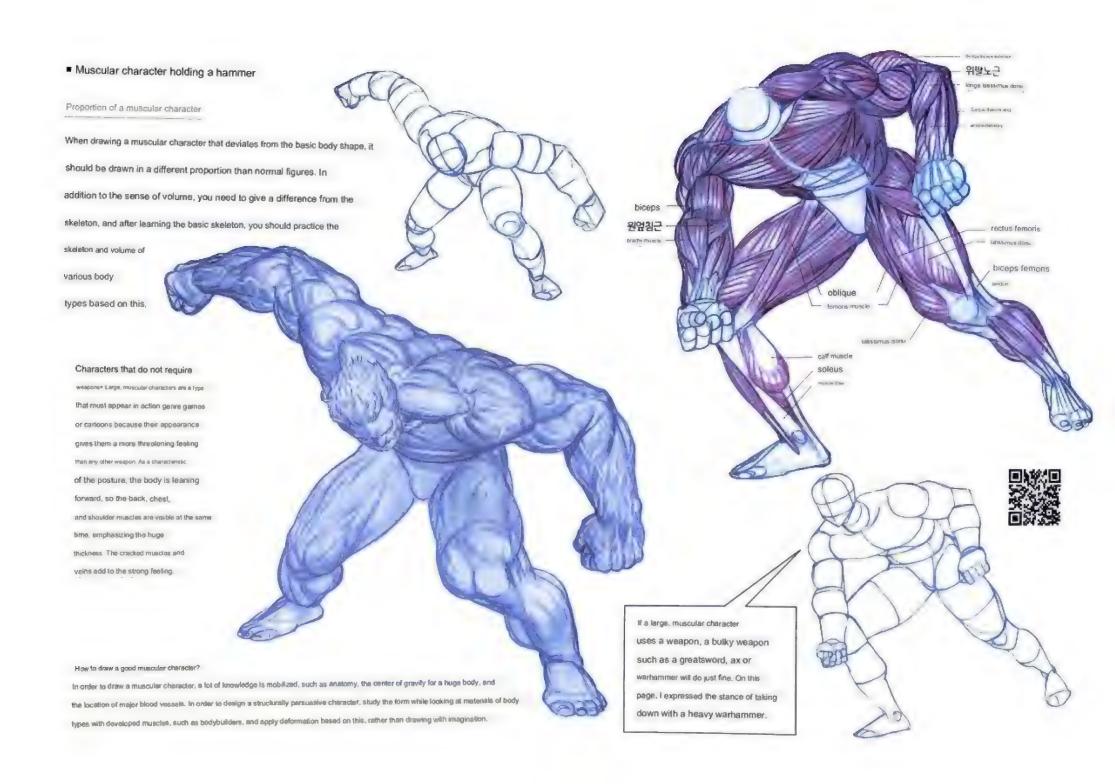
joint is bent, winkles appear

on the muscle.

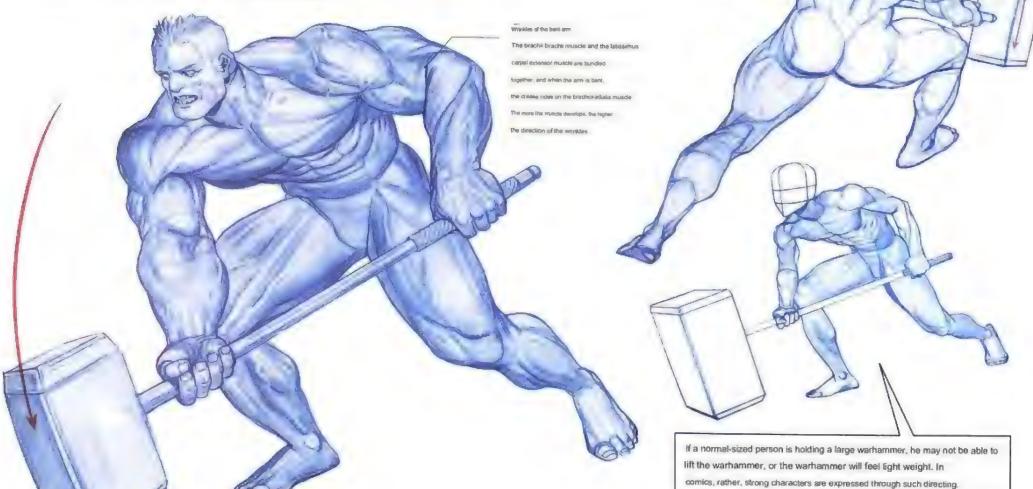
Observe the staggered tilt of the shoulder and pelvis, and the position of the collarbone and chest in the direct view of the torso of the female character holding the axe.







As mentioned earlier, the weight of an object is determined by the posture of the character holding the object in the picture. In the pose of this figure, the position of the hand holding the warhammer is the most important factor in conveying the sense of weight. Instead of holding the end of the handle with both hands, one hand is holding the warhammer head, creating an effective posture for lifting heavy objects. you can take



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Knee Shoot Stance*

When shooting with a rifle, keep the bottom of the butstock against your shoulder and put your face on the top of the butstock to absorb recoil and take a natural aiming position. It can be said that the knee shooting posture is a shooting posture with a high accuracy rate because the lower body and the ground are firmly fixed than the standing shooting posture. However, it is more difficult to move while shooting than standing and shooting, so it is difficult to react to the opponent's strack. Or a posture used in a space where cover is possible. In the prone shooting posture, which has the highest accuracy rate among shooting postures, both arms holding the gun are fixed to the ground, so there is little recoil from shooting, and it is also possible to hide from enemy attacks. The downside is that if has a slow response to attacks from the air.

impromptu shooting stance>

If tooks arealar to the prone shooting position but it is not classified as a prone-shooting position because the gun is not held with both hands. Assuming a situation in which a pistol is suddenly putted out, it is an impromptu position in which you give up arming and only hold the shooting direction with one hand, it is used to create a sense of urgency and speed

Shooting posture in creative works

Not all the shooting positions you see in carbons

or movies are based on realistic theory.

Trying to express a shooting stance within a realistic

range can be an obstacle to creative storytelling. Unless

it is a professional action genre related to guns, as long

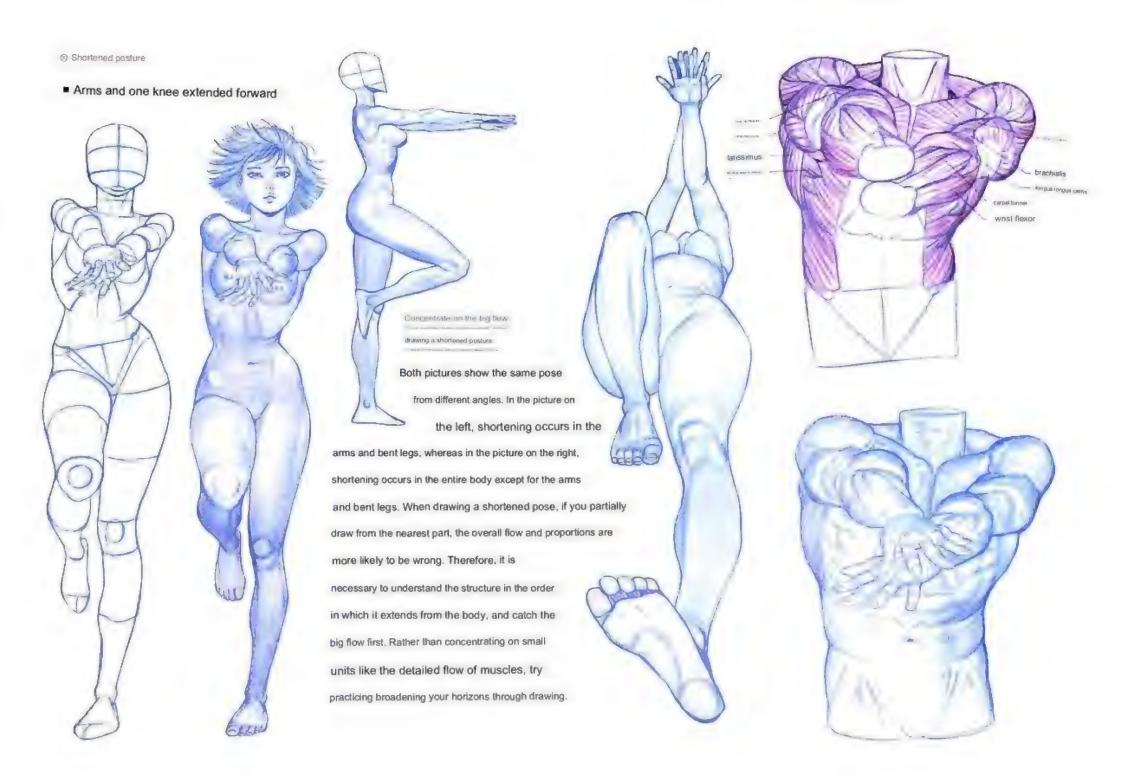
as you have the basic shooting action of keeping your arms

stretched out and holding a pistol at eye level,

you can try various movements depending on the story

or direction. This allows creative scenes to be created.











Drawing characters of various genres

When cooking, no matter how well you make the seasoning, if the ingredients aren't fresh, they won't taste good, Likewise, no matter how original the concept is, if the human body of the character wearing the item collapses, the overall quality of the picture will look poor. In this way, trying to deform and adding various designs while studying the human body has not yet been done properly is a way to study out of order. In addition, 'creation' is not to create a design that has never existed before, but to recombining existing elements to give a new feeling. In order to draw these existing elements well, 'imitation' should be practiced before creation. A human observes more closely when looking at a human being of the same species than when looking at another object, and when drawing a human being, the same finer observation is exercised. Therefore, rather than practicing by looking at non-human objects, studying the human body is the most effective way to practice drawing to develop observational skills. When the structure of the human body can be expressed to some extent using this

principle, it becomes relatively easy to draw objects other than the human body. In Chapter 1, we learned about the proportions and volume of the human body and the driving principles of joints through figure drawing, and in Chapters 2 and 3, we learned about the principles and structure of muscles through anatomy and materialized the flow of the human body. In Chapter 4, we looked at how this information is actually applied in various movements. In this last chapter, Chapter 5, we will look at how to express characters of various genres, such as superheroes, fantasy world races, armor and mechanics, based on human anatomy. In addition, we will study how to find and apply big flows and patterns in complex and colorful action compositions through illustrations.





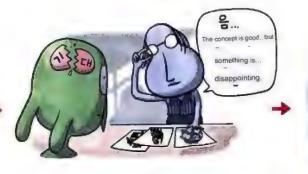














It is full of anticipation.

But the reality was grim.



The next morning, Mr. Ana leaves the house and

Sam Rak-hee appears from the pencil sharpener like a snail.



Hee-sam Rak edits something in the rejected painting.



After a while, Ana takes on the challenge again.



Oops... is this deja vu?!





The editor's acclaimed picture



It was the hand of Lak Hee-sam.





Ms. Ana has had a great realization.

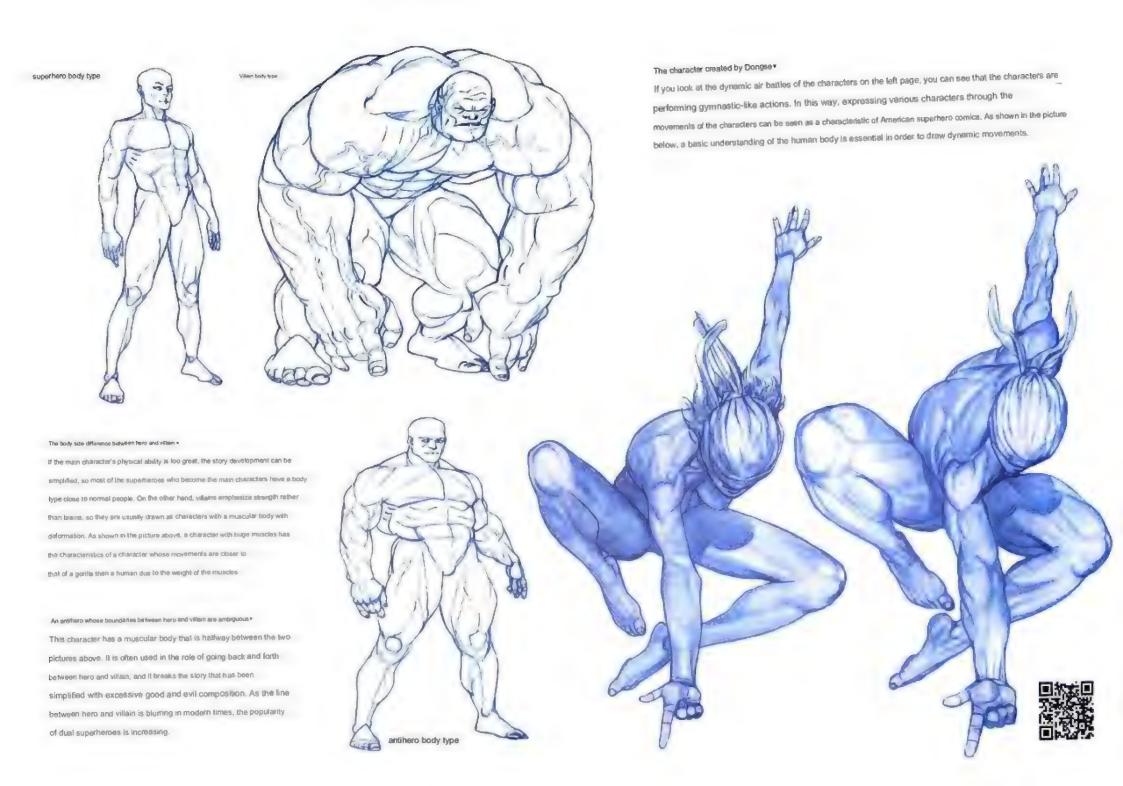


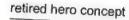
and a clear confrontation is

formed in a dichotomous way.

Characteristics of American superhero comics



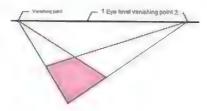




This character is a superhero concept with self-healing ability, and has lived many times longer than normal people, soothe the weight of life with alcohol. Dongse, who is spread out on a worn-out sofa like himself, gives a feeling of having reached a state of giving up beyond the boredom of life. Through the many scars and tattoos on the body, we are conveying how difficult life was in the past, and we wanted to express the toughness of the young days through facial expressions.

Which should I draw first, a sofa or a character? You should draw a sofa that is larger than the person first.

If you think about it simply, it's because a person can't sit without a sofa. You can understand the space through the sofa, and you can catch the motion of the person based on the inclination of the backrest or the spacing of the armrests.

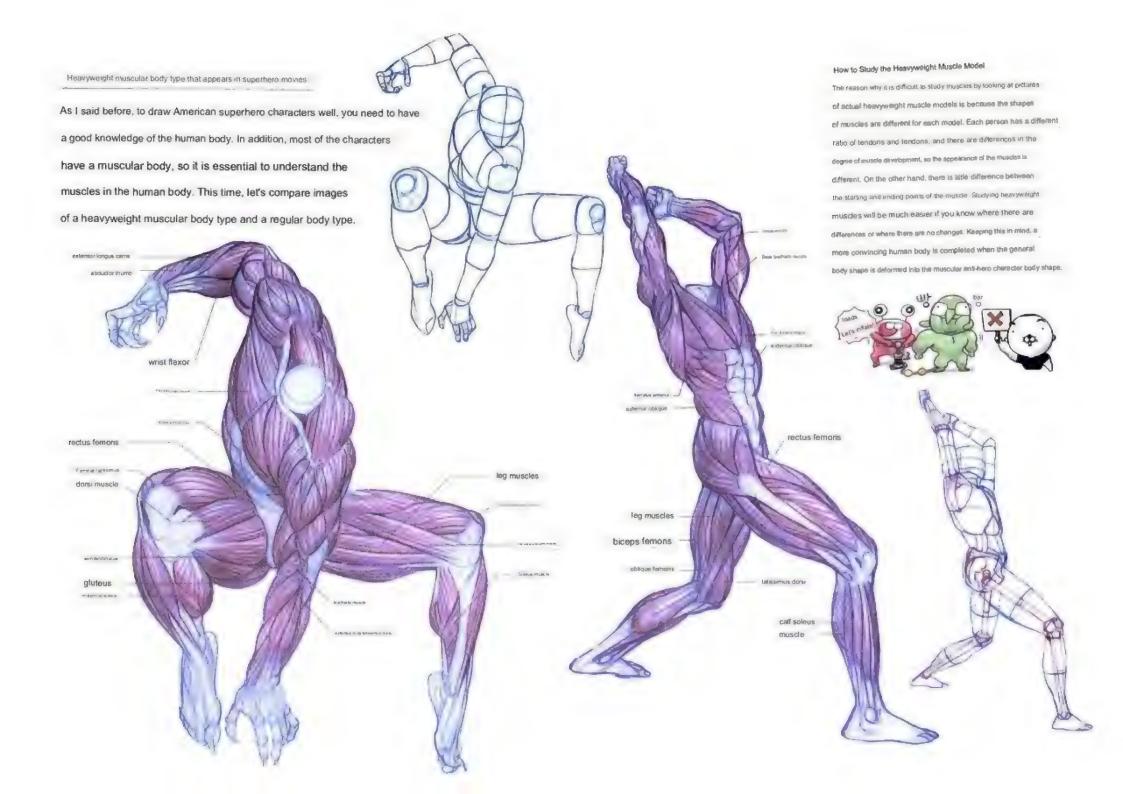


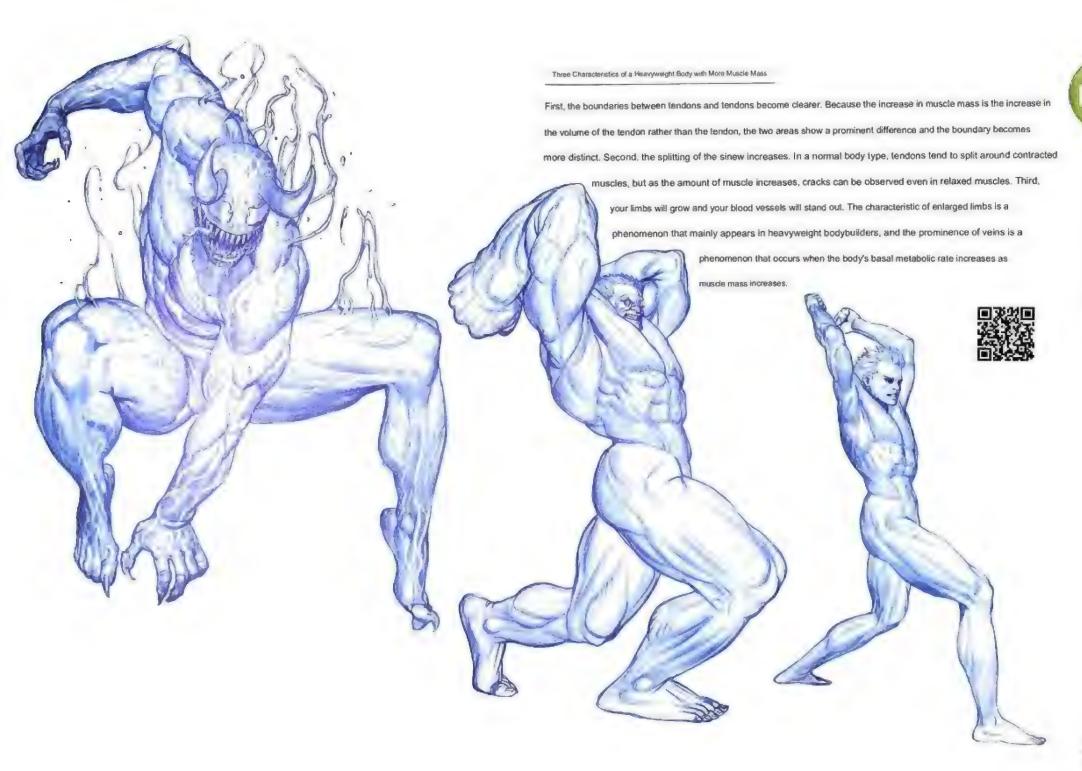
Setting the space

Even if you draw a person or an object, it is important to set the eye level to draw the perspective line.

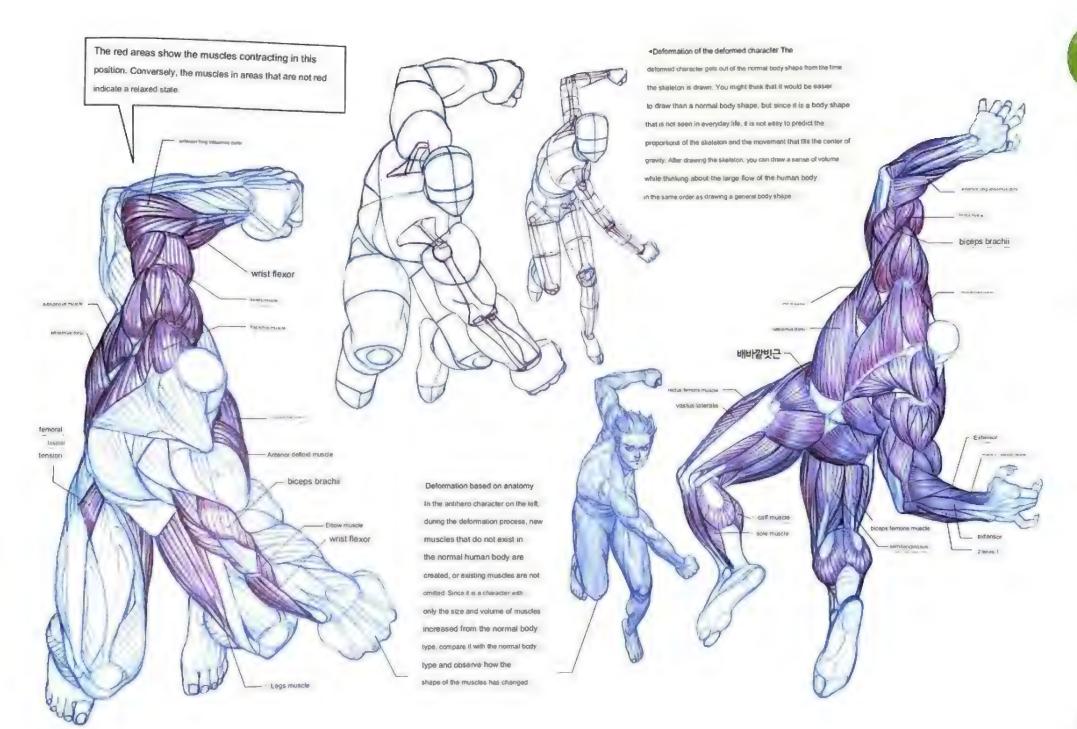
Like a paintling, even drawing a sofa requires perspective.

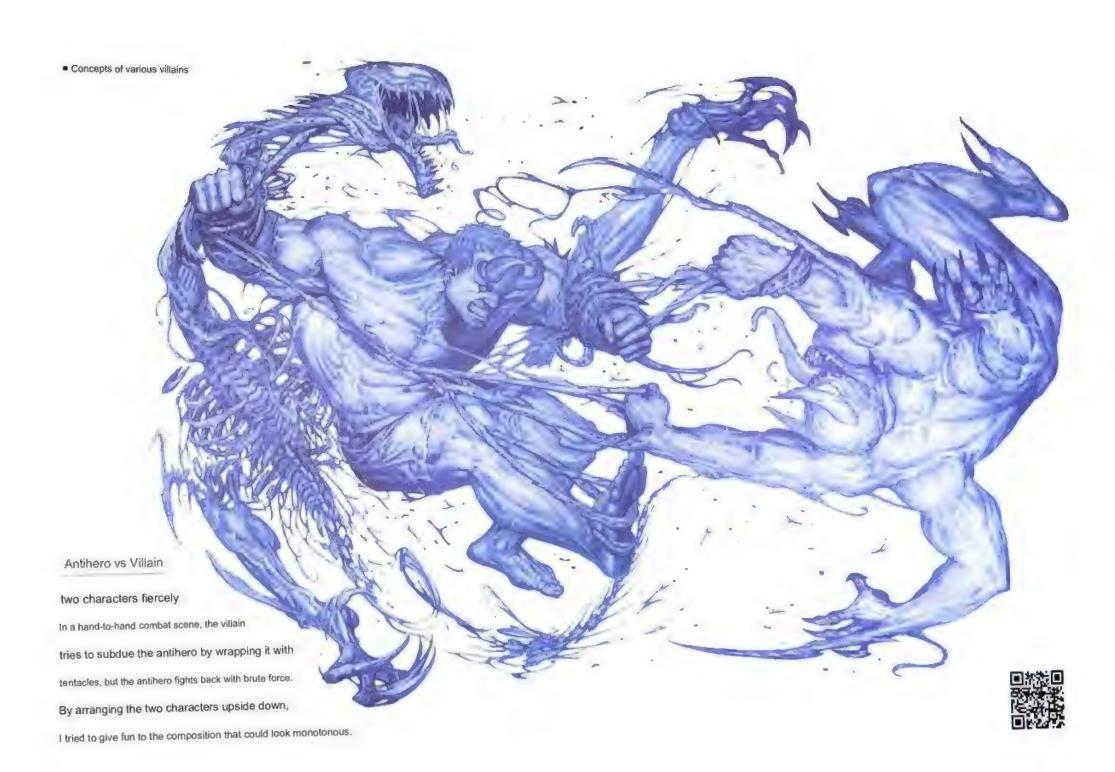
A character's situation or emotion can be conveyed with just this small movement of the feet.





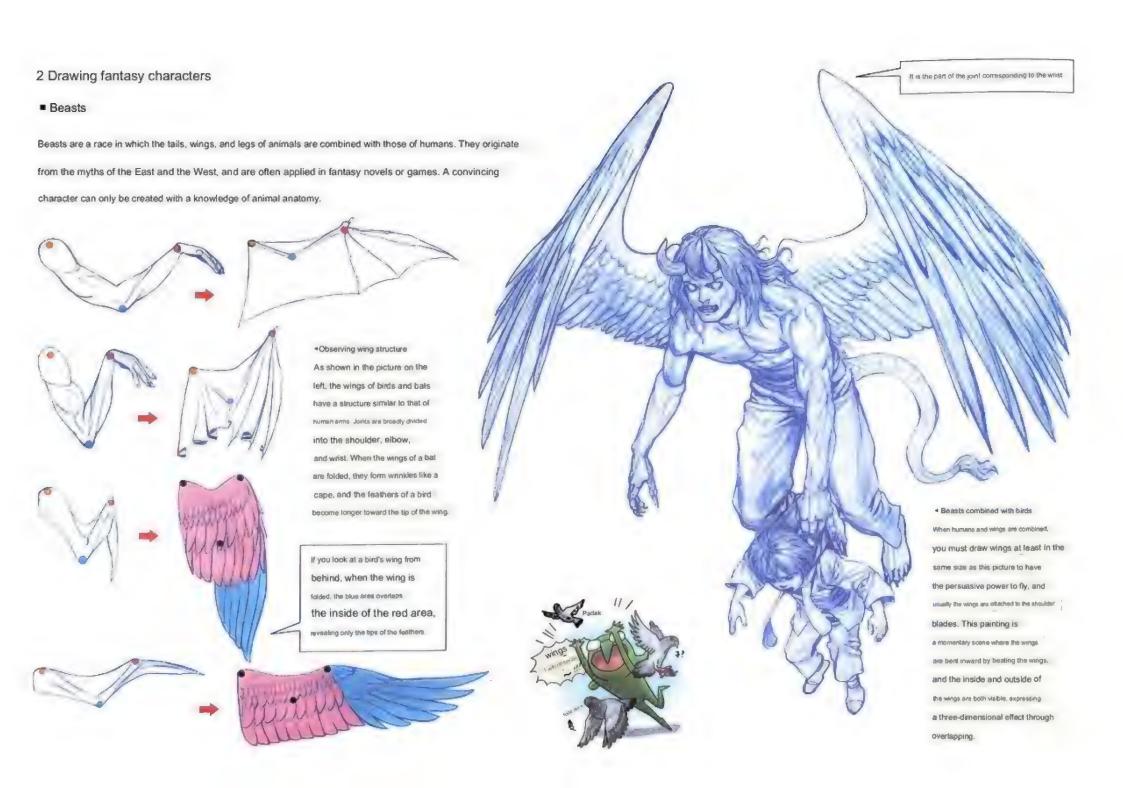






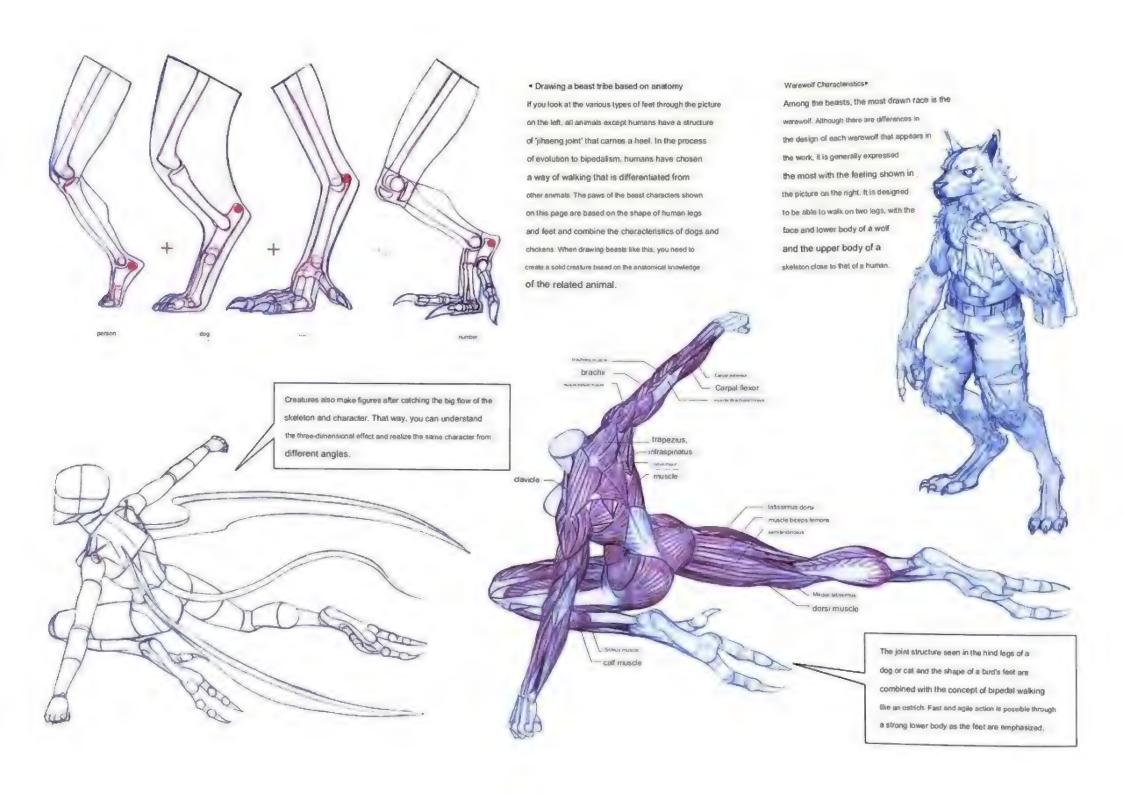














Gr

This character's wings are not meant to fly, but rather help

The tall acts as a rudder

when moving quickly in

the trees.

Grab a character concept based on basic skills

when leaping from the ground. As the lower body develops, the wing is a setting that reflects the characteristics of a species that is gradually degenerating.

Wood Elf Concept

The shape of the lower cody when standing were both feel on the ground

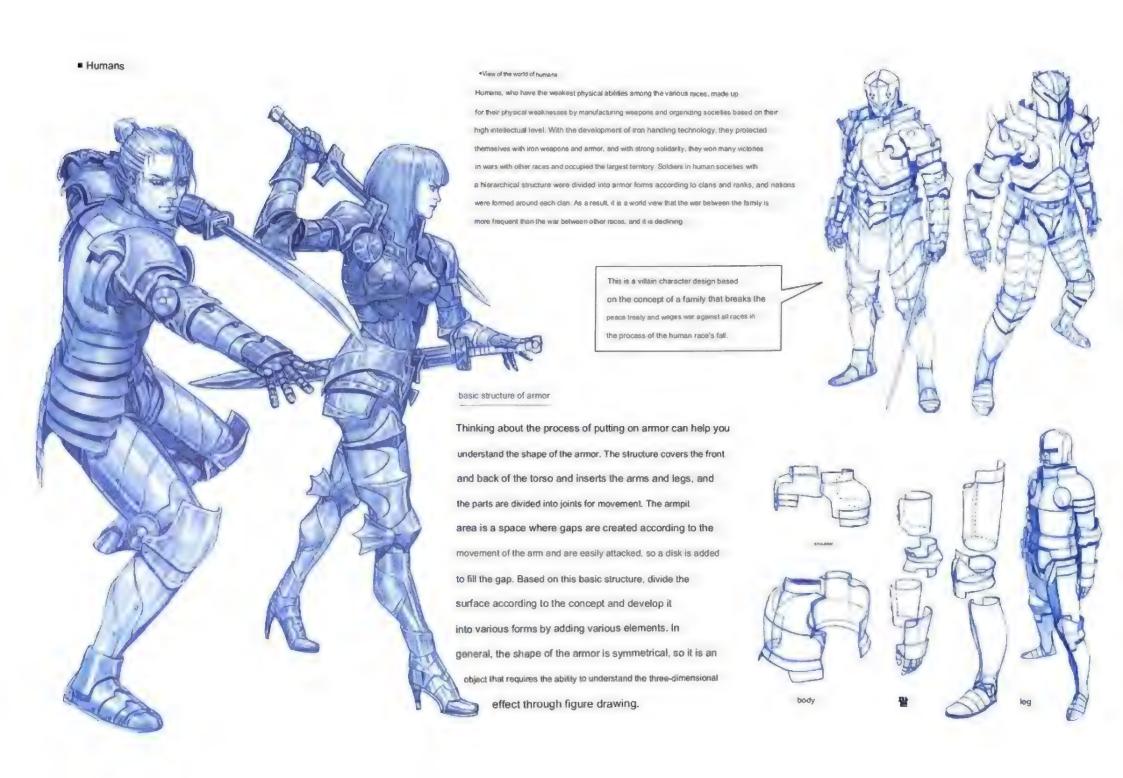
They are a tribe of beasts
who live in dense forests like jungles.
They are called 'Wood Elves'
because their pointy ears resemble those
of elves. It has strong lower body strength

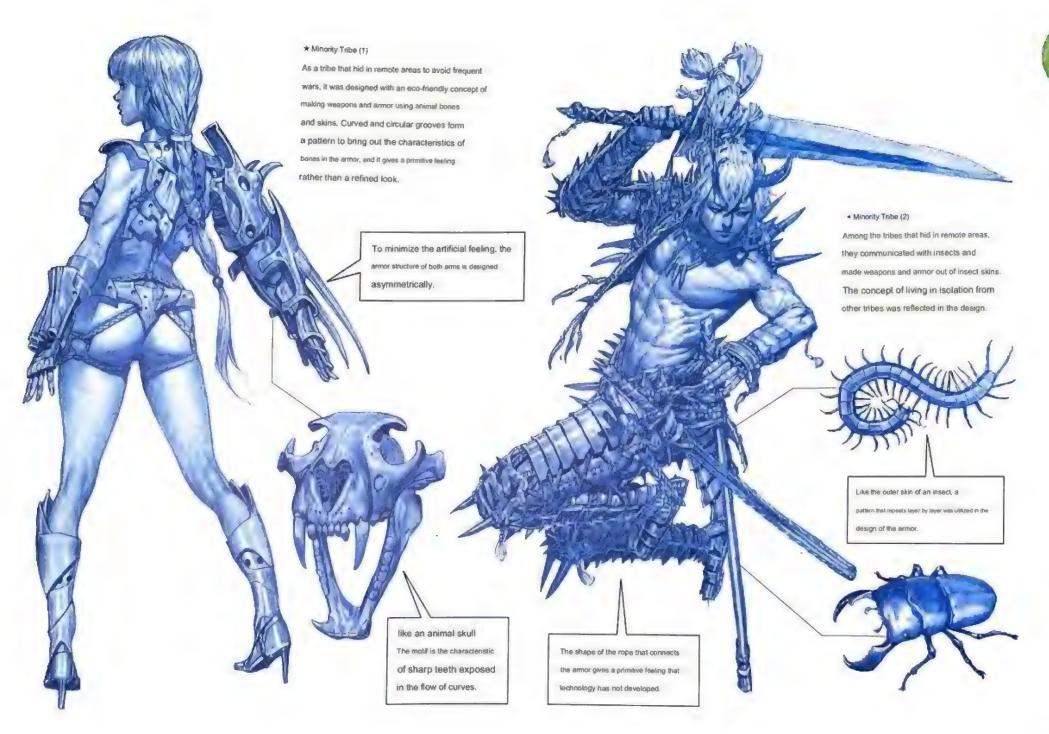
and bird's feet, so it can jump

between trees nimblely, grasping

branches with its feet. Wings exist, but they are used for leaping, not for flying. When hunting or fighting, a short sword, a two-handed weapon, is mainly used.

> Its toes have evolved like birds to stably grab branches, and its lower body has developed so it can move quickly with the jumping power of its two feet.







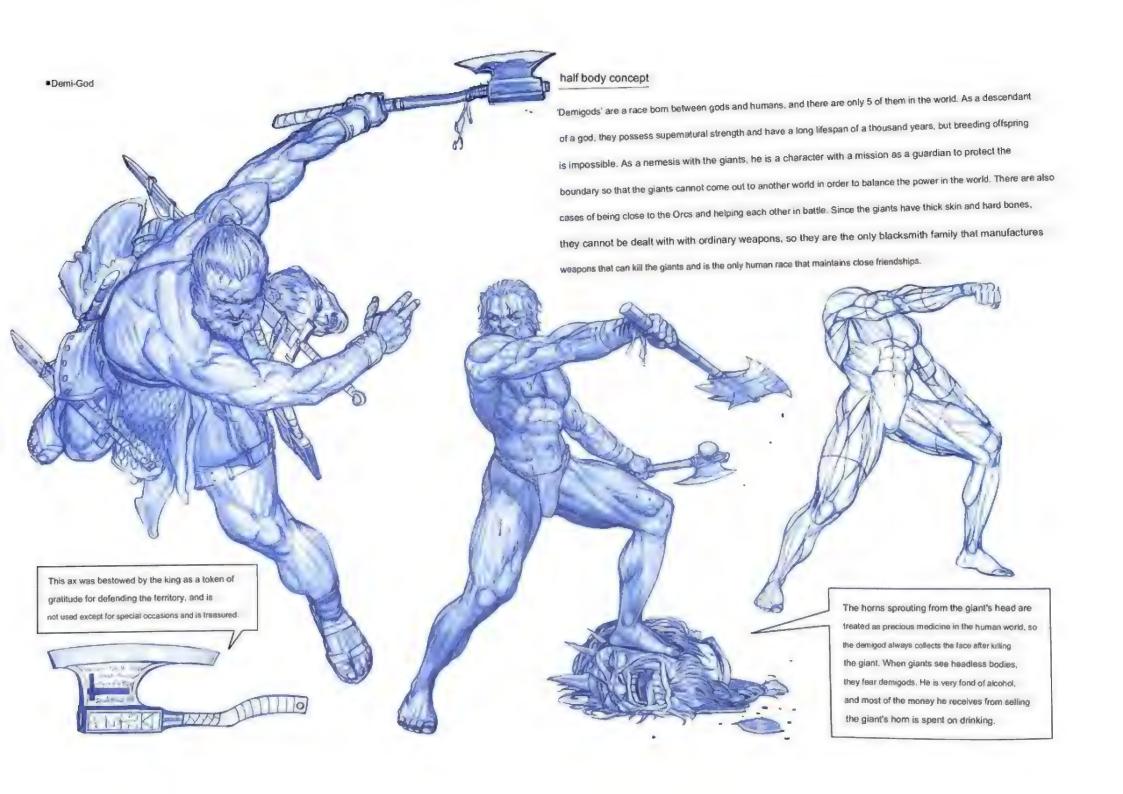
Orc concept

Orcs are menacing beings raised solely for combat, and they mainly use skills that deal heavy damage with warhammers or axes to match their huge size. Because the weight of the armor is heavy, the equipment is fixed with a chain rather than a regular rope. They like to decorate the homs of the animals they hunted as trophies. Most Orcs are low-intelligence and warlike, but this character, as the leader of the pack, has the qualities of a leader who leads the race with cool situational judgment and the appearance of a strategist who can devise advanced strategies. It also has the principle of not engaging in unnecessary battles or looting even though it has great power.







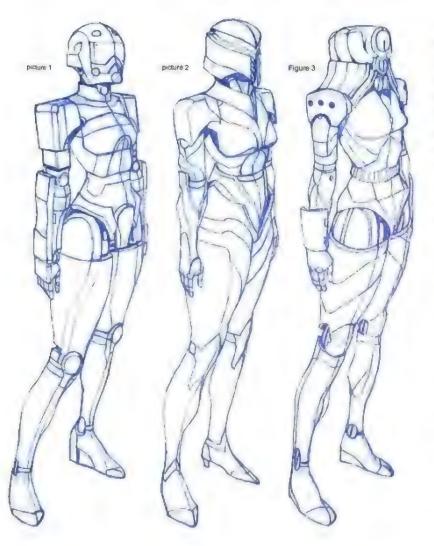




3 Mechanic Character Drawing

■ Mechanics and figures

Mechanics, artifacts, are literally combinations of shapes. Human figure drawing and mechanics, which divide large figures into small figures, are drawn in a very similar way, and if you have a habit of drawing with figures, you will be able to express mechanics without difficulty. However, if you can't find a big flow in the mechanics of complex shapes, it means that you lack the habit of interpreting the structure with shapes.



◆Patternize and draw

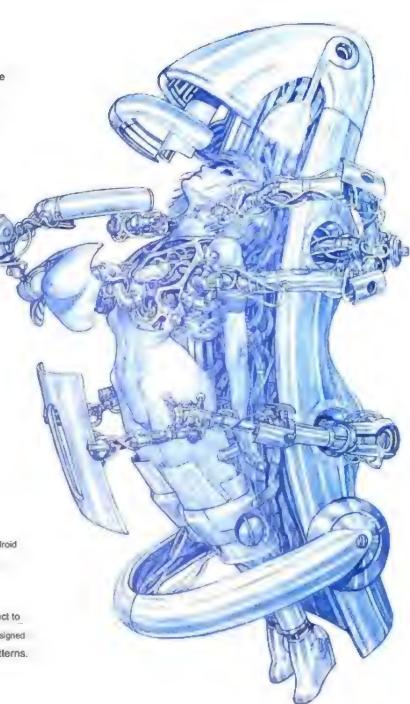
When designing mechanics, it's better to grab a few design concepts and draw them out rather than blindly splitting faces. Figure 1 is a pattern drawn with an angled straight flow, and Figure 2 is a pattern drawn with a wave-like curved flow. Figure 3 shows smooth curves as the main flow white minimizing angular parts.

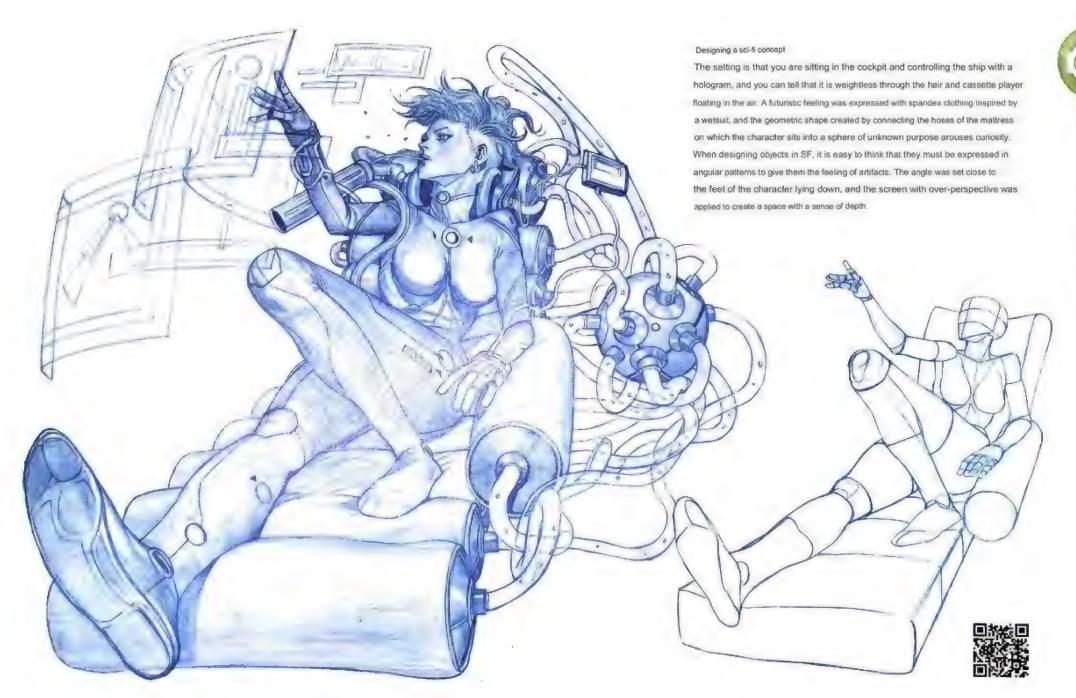
In this way, a sophisticated design with unity can come out only when several patterns are selected and drawn.

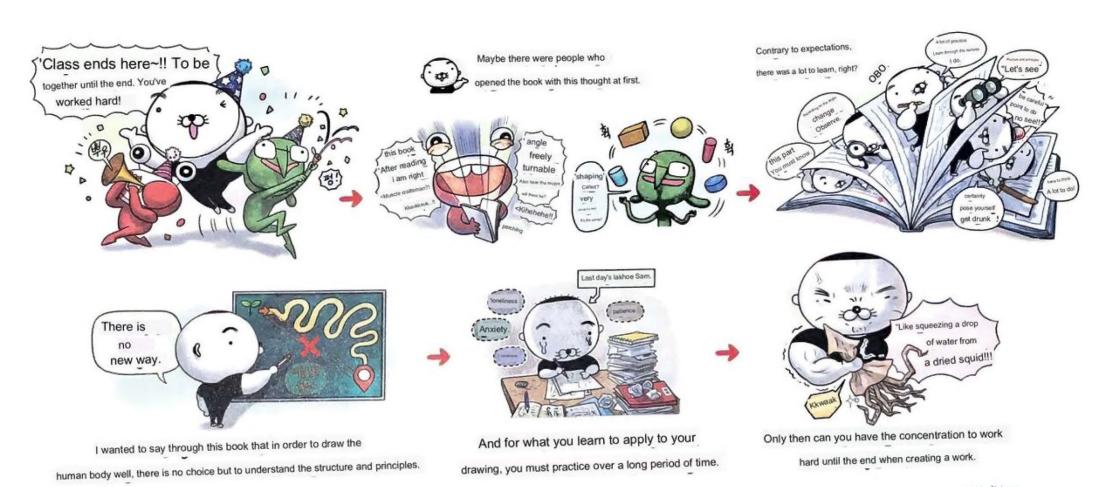


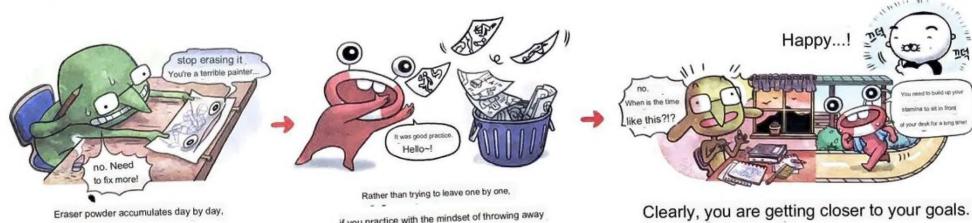
Mechanic Concept .

This picture expresses the process of assembling an android in a large capsule-like machine, and the flow of the structure is expressed in a streamlined form to give it a futuristic feel. Also, to avoid an overly coherent design, the complex and simple parts intersect to give strength to the flow. The parts with open chests are designed to look like real organs, creating more diverse patterns.









if you practice with the mindset of throwing away

When you start studying the human body, unless you assume that it takes a long time and a lot of effort to draw well, "Why is it so difficult?", "Why isn't it right away?" The more you think about it, the less motivated you become. It is difficult just to draw the human body while looking at a real model, but it is natural that it is difficult to create a person without a model. Even so, when I get stuck on drawing, I put down the pencil and start thinking about my talent. There was a time when I, too, questioned my talents. I think I was able to dig into a well called basic skills because I thought I had no talent for sensuous feelings.

However, even now, I feel difficulties every moment of drawing the human body. Far from getting easier the more you draw, it gets harder every time you draw. I hope that everyone will move forward together with the goal of enjoying the moment of being fully immersed in painting rather than making it easy to draw well. I have a chimney-like desire to revise again because the lacking picture caught my eye, but I will put my regret behind it and thank those who helped me with the book work, and I will cover the bookshelf here.

Park Sang-hee, director of Sang Company, who worked hard several times over to redesign every page to match the picture; writer Yeom Eun-bi, who drew cute characters like star candy in biscuits in a book that could have been heavy and hard; Author. Every time I get stuck in writing, I diligently open [Buddha's Anatomy Notebook]. In addition, the staff at Seongandang Publishing House who patiently watched over the delayed schedule and adjusted many things in the direction I wanted, Professor Yoon Kwan-hyun, who improved the accuracy of the book by taking into account the imagination of the artist even though it was lacking in the eyes of experts, always heart My hero, Professor Lee Hyeonse, who is my eternal teacher who becomes a beacon for me and who guides me to fulfill my dream. I will always be a disciple who is always diligent with respect and gratitude as the driving force. Lastly, I would like to thank the readers who waited for the book and read it to the end.



